THEISTIC EVOLUTION

ALFRED FAIRHURST

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Theistic Evolution

By

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"Organic Evolution Considered," Etc.

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To my wife

ELIZABETH HOLMAN FAIRHURST

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INTRODUCTION

I HAVE in the present volume emphasized certain things to which I think ministers and teachers ought to give the most thoughtful consideration. I hold that theistic evolution destroys the Bible as the inspired book of authority as effectually as does atheistic evolution. To this fact I wish to call the special attention of those who accept the Bible as the one book of authority in religion.

Theistic cosmic evolution, it is claimed, is the process by which God does all things, so that every event is a part of the process of evolution. It is evident that a miracle can not be a part of the continuous, unbroken process of evolution, and that the miracles of the Bible are entirely outside of the process.

The attitude of evolutionists at present is that evolution is a *fact*. Some claim that it has passed beyond the stage of theory and that it is established science. With most of them the question as to its being a *fact* is no longer debatable, and so the teachers in the various schools and higher institutions of learning simply assume it to be a *fact*, and thus they are relieved of trying to teach the *method* of evolution. But *method* has been the great question which evolutionists have tried to establish. "Natural Selection" was Darwin's great contribution to *method*. This theory has, however, been largely discarded by evolutionists. There is no agreement whatever among them as to *method*. They are disposed to be silent on this subject.

It is conceivable that evolution might be a fact and that at the same time we might be ignorant of the method. I hold that we do not know it to be a fact, and that we are entirely ignorant of any methods by which it may be established as a fact. It is only a theory.

From the present attitude of accepting it as a fact it is necessarily taught dogmatically, the result being a large crop of dogmatists, who know practically nothing of the subject. And yet this theory is spoken of as valuable science and is being so taught.

I hold that it ought not to be taught as a *fact* in any school, and that when evolution is considered, the *method* ought to be considered in detail. The present method of teaching it is harmful and misleading.

There is no good reason why the theory of evolution should be presented to pupils in primary and secondary schools. Its consideration should be left to the higher classes in college, and the facts bearing on it, *pro* and *con,* should be fully considered when taught.

I am convinced that the subject of evolution ought to be eliminated from the primary and secondary schools, by law, if necessary. In these schools the immaturity of the pupils and the incompetency of the teachers render the subject highly unprofitable.

I feel assured that if cosmic theistic evolution is accepted and pushed to its logical results, the Bible as the inspired book of authority in religion will be eliminated. This matter is fundamental in the moral and religious life of the world. ALFRED FAIRHURST.

LEXINGTON, Ky., Jan. 17, 1919.

I

GOD'S METHOD OF WORKING

Preparation of the Earth for the First Living Things.

GOD has worked through all the ages and is working now. He is the author of all things on earth —matter, force and mind.

My purpose is to state, as far as I can, what has taken place in the history of the earth—to state known facts from which legitimate conclusions can be drawn.

As to matter: Something less than one hundred kinds of simple substances are known. A simple substance can not be separated into two or more kinds of matter. A few simple substances make up most of the known part of the earth.

Matter has weight and inertia. It maintains its state of motion or rest unless acted on by some external force.

As to force: Some of the forces of nature in the inorganic world are light, heat, electricity and chemism. Forces in action put matter in motion. Without the action of force, matter would remain in a fixed position. Potential energy, energy stored up, does not give mass motion.

Gravity acts on all matter at all distances. Its stress is inversely as the square of the distance of

bodies from each other and directly as the product of the masses.

Chemism is the force which causes simple substances to combine to form compounds. It acts at insensible distances only.

Light, heat and electricity depend for transmission on the hypothetical ether as a medium, which ether fills all space except that which matter occupies. Heat and electricity are also subject to conduction.

A most important fact is that each of the above-named forces may be converted into all of the others, so it may be that there is but one essential force in the inorganic world.

The living world also includes life, feelings, instincts and mind, which have been most important factors in producing changes during the earth's history. These, as modifying agents, can not be included among the forces of the inorganic world.

We start with the idea that the earth, with all of its forces and agencies, is the work of God.

As a scientific problem, however, we refer all changes that have taken place, and that are continually taking place, immediately to the forces that manifest themselves in and through matter. The possibility of the physical sciences rests on this fact.

The history of the earth extends over millions of years, during which time, at every moment, innumerable changes have taken place.

It is established science that the history of the earth extends over millions of years. There seems to be no doubt that the earth was once melted, and that, possibly, its elements were in a gaseous condition. In that condition the elements, owing to the intense heat,

would have been separated from each other. The earth has been a cooling body for millions of years. This means that it was giving off more heat than it received. During the process of cooling, the elements, which had been kept apart by the intense heat, united with each other to form compounds. These compounds constitute the crust of the earth and the great mass of the water in the oceans and elsewhere. The principal part of the earth's crust is made up of silica, silicates and carbonates. Oxides, sulphides, chlorides, sulphates and nitrates, and various free metals, such as gold, silver, copper and platinum, are among the common minerals.

Most of the minerals that form the earth's crust have been oxidized, and are very insoluble in water, thus giving stability to the crust. The chemical forces have done most that they can do in modifying the crust of the earth, so that the crust is in comparative chemical equilibrium, but everywhere these forces are more or less active, and on this perpetual activity depends largely the fertility of the soil.

The earth, from the time it was a gaseous or a molten mass, has, so far as its energy has been concerned, been a dying world. Its changes have been the radiation of a vast amount of heat into space, the formation of a great number of chemical compounds, and the changes in the earth's crust due to the action of the force of gravity. Thus the loss of heat, chemism and gravity had most to do immediately in preparing the earth for the first living thing. The preparation of the earth to support living organisms demanded the exercise of no forces other than the inorganic forces of nature. Through the immense time during which these physical changes were taking place no unbroken con-

tinuity can be discovered. The word "evolution" can not be applied to these chemical and mechanical changes in the sense in which it must be used when applied to the organic world.

Origin of Living Things on the Earth.

The advent of life into the world marked a new and most important era in its history. There seems to be a great gulf fixed between the living and the dead. The forces that were at work rendering the earth habitable by living beings were those of inorganic nature. From a scientific point of view the first living thing on the earth had no ancestor except the different kinds of necessary matter and the forces that had been at work on them through the long ages. As a scientific problem, spontaneous generation had to take place. It is evident that the preparation of the world for life must be included as a part of the process of evolution, and that evolution must account for life as a part of its process. It must lift the dead into the living—a process which no evolutionist has ever been able to explain. It lies at the threshold of organic evolution. The evolutionist is not at liberty to thrust it aside. It is his legitimate problem. If evolution preceded the first living thing and if it has prevailed ever since life was first introduced, it must include the origin of the primordial organism. If evolution is the universal scientific process that it is claimed to be, it can not eliminate any necessary link in the unbroken chain of its process.

Scientific men admit that there is no scientific evidence to prove the fact of spontaneous generation. Darwin said that "the inquiry as to how life first

originated is hopeless." He is the father of modern evolution.

E. D. Cope says: "Failure of the attempts to demonstrate spontaneous generation will prove, if continued, fatal to this theory. With our present evidence, it may be affirmed that not only has life preceded organization, but that consciousness was coincident with the dawn of life."

Tyndall, having performed nearly a thousand experiments bearing on spontaneous generation, concluded that, so far as the experiments showed anything, it was that a living organism must have a living parent for its production.

The scientific solution of the problem of spontaneous generation is evidently hopeless. Cope says that the "failure, if continued, will prove fatal to this theory" (evolution).

From a chemical point of view the theory seems hopeless. A vast number of chemical compounds are formed by living plants alone. The inorganic world of dead matter and force can not manufacture these compounds. The inorganic world, guided by the mind of man, has produced a few of the compounds that plants manufacture. But plants have a corner on methods. Man's methods in the laboratory are entirely different from those used by plants. The life of the plant, using matter and force of the inorganic world, does vastly more than can be wrought by these agencies when guided by human powers.

Every living thing contains, as a necessary part of its body, protoplasm, which is regarded as the essential living substance. There is no hope that it can ever be made artificially from the inorganic elements. But

this must be done, if in any way inorganic chemistry would serve the cause of spontaneous generation.

Cope says that "facts and logic do not support the derivation of the anagenetic from the inorganic energies." He also says that "purely chemical phenomena in both organic and inorganic processes are degenerate." That they are so, is shown by the fact that most chemical actions are accompanied by the emission of heat—the loss of energy. The tendency in the inorganic chemical world is to form more stable compounds, accompanied by the loss of energy.

There is no way in which energy can be stored up in large quantities by the inorganic world. The agency of living plants alone, when acted upon by the sunshine, can store up energy. Hence, the anagenetic energies due to life prevail. When the plant dies, its complex chemical substances, woody fiber, protoplasm, etc., decompose and pass into simpler and more stable forms, which serve as plant food again. In this retrograde movement the catagenetic forces prevail. Excluding living things, the course of nature is downward, is catagenetic.

Here, then, we see two general tendencies among the forces of nature. In the inorganic world they are always catagenetic, and these forces without life can not contribute to the anagenetic forces in living beings. In other words, catagenetic forces alone could not produce a living thing—could not bring about spontaneous generation.

The Plant Constructive.

The plant alone manufactures complex organic compounds from the mineral world. It may be compared

to a storage battery. Most of the kinetic energy that the majority of the higher plants receive from the sun is stored up as potential energy in the form of woody fiber. This energy has been conserved in large quantity in the form of coal. In other cases it is stored as potential energy in seeds, which becomes anagenetic energy during the growth of the plant from the seed. This energy is stored largely as the complex gluten, starch, sugar and other organic compounds that compose most of the weight of the seed, so that the energy of early growth comes mostly from organic compounds.

The food in the seed having been exhausted, the higher plants depend exclusively on inorganic foods for their growth. Water, carbon dioxide, ammonium compounds and nitrates, all of which are comparatively simple, are among the most important foods which plants require.

Animals can not live on inorganic foods alone. They can not convert the food of plants into the tissues of animals. They can convert the gluten and other proteins which plants have manufactured into muscular tissue and other protoplasmic tissues of the body; and, also, starch, sugar and some other foods that plants produce, into fats and oils that exist in the bodies of animals. The energy stored up in animals is furnished ultimately almost exclusively by plants.

The Animal Is Destructive.

The animal is generally much more destructive in performing its functions than is the plant. It continually parts with its energy and destroys its tissues in doing its work. It has been truthfully said that living is a dying process. Animal tissues are built up mostly

that they may be destroyed by use. If the building and repair of tissues exceed the waste, the animal increases in size and strength; while if waste of tissue and energy is in excess, death and dissolution soon overtake the animal. The anagenetic forces of life and the catagenetic forces of death are ever struggling in the animal organism.

The Constructive Work of Animals Depends on Plants.

The body of the animal is composed of many highly organized tissues, manufactured mostly from organic foods which plants have furnished. The tissues of the animal have not been manufactured by the plant—the life forces in the animal alone can construct its many peculiar tissues. In addition to the more or less solid tissues of the animal, there are many peculiar organic substances in the body of the animal which are necessary for the performance of its complex functions.

When we add to the organism of the animal the various psychic functions that exist in the animal kingdom, we see that the gulf between this and the vegetable kingdom is greatly deepened and widened. It is evident that the animal, because of its structure and its functions, belongs to a kingdom vastly superior to that of plants.

If matter and the ordinary forces of nature alone can not account for the origin of the plant, much less can they account for the origin of the animal. It requires inorganic matter and force, plus the life of the plant, plus the life of the animal, to account for the animal, and in the case of man to the above things must be added a free dominant spirit, with its multitude of

powers, which controls the forces of nature in such a way as to modify, beautify and render fruitful the whole world for the benefit of man.

Upward Steps in Creation.

Looking at the organic world, we see a series of great upward steps. From the inorganic world we ascend to the vegetable, which is destitute of conscious feeling, then upward to the animal world, throughout most of which, at least, exists conscious feeling, and to this are added the various special senses—sight, smell, taste, hearing and others; also the instincts, and, finally, the mind of man.

The creation of the practically infinite number of species in this organic world, with their endless varieties of structure and function, the evolutionist would explain by the use of the word "evolution." It is evident that when he uses the word in this way he uses it in a different sense, so far as the forces involved are concerned, from that in which he applied it to the inorganic world when it was being prepared for living things. In the latter case the forces were catagenetic —away from life—as they always are in the inorganic world. It is only when the anagenetic—the life forces —come into action in plants and animals, that the upward movement against the destructive forces can take place. But this upward movement soon ceases in individuals. The battle between the forces of life and those of death soon ends in the victory of the latter. Certainly the forces of death can not be the sole causes of the existence of life.

Life moves up-stream against constant pressure. It moves against the ever-present, destructive, disintegrat-

ing forces that would sweep it backward until, finally, the living forces of the individual are exhausted. If the downward forces are to be regarded as evolution, is it proper to apply this word to the upward forces? It is evident, I think, that the downward forces are not the sum total of the forces involved in the organic world.

Darwin Begins Life with a Miracle.

Darwin speaks about "life with its several powers having been originally breathed by the Creator into a few forms or into one." He introduces a miracle with which to start, but after that he excludes all miracles, by the naturalistic process of evolution. If he is obliged to admit a miracle to begin life, then miracles are not excluded by the nature of things. He is obliged to accept a miracle as the foundation of the theory of evolution which absolutely excludes miracles. Here, then, are two things, diametrically opposed, that Mr. Darwin felt obliged to accept. But if, during the evolution of the earth, it came to pass that the Creator must perform a miracle to introduce life, why not more? Why not logical to create animals by miracles, and the various psychic powers, including the mind of man? If possible, it would seem that there is a greater gulf between the human mind and any power below it, than between the first simple organism and the inorganic world. But the theory of evolution must not grant this, for it would be accepting a miracle. Mr. Darwin, having granted a miracle as his necessary starting-point, has mounted evolution, as the steed which is to carry him up the ascending mountainous road by way of evolution, has made him mount the

steeps and leap the wide chasms that lay in his way, until, at the close of the route, both rider and horse remind one of death's skeleton spurring on his bony steed.

In the "Origin of Species" (p. 432), Mr. Darwin says: "I believe that animals are descended from at most only four or five progenitors, and plants from an equal or lesser number." He has already stated that life was "originally breathed by the Creator into a few forms or into one." His real belief, however, was that the Creator breathed into from seven to ten different forms, that they might become the progenitors of plants and animals. These different forms for different purposes demanded separate miracles, thus increasing the difficulties of evolution, and rendering it more probable that the Creator might perform subsequent miracles.

The fact that quite a number of forms were created as a beginning for the organic world indicated that the Creator did this with a view as to the future, exercising a discriminating and prophetic and creative power as to the future outcome. Take, for example, the simple cell or structure that was the egg from which, by evolution, all the species of vertebrates would finally descend—what an immense, unimaginable potentiality it contained. The egg of a single mammal which develops into a highly organized living, active being is beyond our ken; how infinitely more wonderful was that primordial egg which, through successive generations, by the continuous process of evolution, could give rise to the tens of thousands of vertebrate species, including man with his dominating mind.

The creation of the several original forms, with their untold powers of development, as claimed by Mr.

Darwin, was the greatest of all miracles. The man who can accept that ought to have no difficulty in believing the miracles of the Bible, for they are mere pigmies compared to the first Darwinian miracles of creation.

The derivation of a living thing from a living parent is the limit of human experience. We constantly assume that the living thing that we see had a living parent. This method, strictly applied, would lead to an endless series of living organisms in the past. But we know absolutely that there was a first living thing that had no living parent. At this point the method changed, and *essentially*—so far as nature shows—the living was derived from the dead and not from the living. Human experience, at most, stops short as we move backward to where life ends in the inorganic world.

Must Assume the Existence of a Power that Can Rule Force in Inorganic World.

If, as already shown, the catagenetic forces could not create life, it becomes necessary to assume the action of a higher power than these forces, that could create the living. This, Mr. Darwin admits by referring the origin of the first living things to the Creator. Let it be remembered that by doing this he has opened up the way to an indefinite number of miracles by the Creator, wherever along the line of creation the existing forces would not account for the changes. Le Conte says that "the passage from one plane upward to another is not a gradual passage by a sliding scale, but *at one bound.*"

As we move upward in the scale of creation, the difficulties increase more and more. All animals have

some kind of feeling. How, by the strictly scientific method, which evolution claims as its own, can we explain the existence of feeling? Matter, motion and force fail to explain the life of the plant; how can they account for feeling—a function above that of plants? How account for the feeling of touch, of pain, the sense of warmth, the desire for food, and many other sensations?

Miracles Needed to Account for Psychic World.

If various miracles were needed to create the first living things as a starting-point for organic evolution, would not some additional miracles be needed to create the various powers of sensation? Herbert Spencer says: "That a unit of feeling has nothing in common with a unit of motion, becomes more than ever manifest when we bring the two into juxtaposition." In other words, feeling of any kind can not be derived from molecular motion, which is its only scientific basis.

If we consider the many and diversified instincts in the animal kingdom which have originated separately in the thousands of species, we would be unable to account for their origin by any plausible naturalistic theory. In "Organic Evolution Considered" I have dealt with a few instincts. I have there given considerable attention to the numerous and complicated instincts of the honey-bee. I have endeavored to show that these wonderful instincts, which belong mostly to the workers, which are neuters, could not have arisen by inheritance, nor could one instinct have given rise to another. And all of these instincts exist to perfection and must exist together, in order that the hive may do its work. Pure science is unable to account

for these powers. While the materials and the forces of inorganic nature are involved in all living things, they can not give rise to any psychic function, and least of all to those of a high order.

Organs of Special Senses.

The scientific theory of evolution furnishes no adequate explanation of the origin of the special senses, with their various organs. It is indeed surprising that so many kinds of eyes, both simple and compound, are found among animals. Many of them are simple and many of them are compound, and some of the latter have thousands of facets. Darwin says that "Miller formerly made three classes of compound eyes, with seven subdivisions, besides a fourth main class of aggregated simple eyes." Sometimes an animal has both simple and compound eyes. Simple eyes, while generally on the head, are located in other cases on various parts of the bodies of animals that have no heads.

Eyes.—It is evident that the many eyes of many kinds have not had a common origin by evolution. Their existence denotes either many separate evolutions or many separate creations. If the former, then the evolution of eyes has been one of the commonest things in nature. That eyes could have been separately evolved so many times, greatly multiplies the difficulties involved. If eyes, as has been claimed, started from pigment spots fortuitously evolved, such spots must have frequently appeared on various parts of the bodies of animals that have heads, and eyes ought to have been developed from these spots. Instead of this, however, eyes are not thus being developed. Besides, there is no reason why such fortuitous spots

should not continue to appear on many of these animals and be at least partly developed eyes at present. There is no reason why an eye could be preserved through its rudimentary stages for many generations till it became an organ of vision. The Darwinian theory is that a structure is preserved because it is useful, but no use as an eye could exist for a long period. If it could serve as a heat spot, this would not render it an "eye-spot," and calling it an "eye-spot" is misleading.

Darwin, speaking of the eyes of vertebrates, says: "It is indeed indispensable, in order to arrive at a just conclusion regarding the formation of the eye, with all its marvelously perfect chapters, that the reason should conquer the imagination; but I have felt this difficulty far too keenly to be surprised at any degree of hesitation in extending the principle of natural selection to so startling a degree." He admits that his theory is "startling" when trying to account for the perfect eye. But why appeal to reason to conquer? The facts on which reason can build are absent. To accept the theory would be purely on the authority of the imagination. It seems to me that the creation of the eye was a good place for Darwin to attribute to the Creator the performance of miracles, as he did to explain the origin of the first living things. To accept the evolution of eyes, not only of one kind, but of many kinds, seems to be the height of mental credulity.

Sight is the supreme sense, by the exercise of which our ideas of form and color and of all relations in space are determined. The eye can form images by the use of the light that has traveled for thousands of years from the distant stars. But the light has not made the eye; it only enables the eye to perform the

functions for which it has been adapted. The eye is shaped and perfected in the darkness of the egg, or, in case of the mammals, in the absolute darkness of the mother's womb. Everything is produced "after its kind." That an eye might lose its power by failure to use it, does not prove that light can give rise to an organ of sight.

Ears.—If we consider the evolution of other organs, we meet with similar difficulties. Various kinds of organs of hearing located in different parts of the body exist in animals; at the base of the foot in clams, in the fore legs in some grasshoppers, in the sides of the abdomen in others, in the wing in many insects, and at the base of the antennæ in crabs and lobsters. These different ears located in various places could not have had a common origin. Besides, the ears of vertebrates, with their very complex structure, demand still another origin. The separate creations of many organs to serve a similar purpose greatly complicate the difficulties of evolution. We can appeal to imagination only in trying to account for the preservation of the various kinds of auditory organs during many generations, through their useless incipient stages. Truly, this theory staggers not at any assumption. It says that it has had to happen by evolution, and, therefore, it did happen. It cuts the Gordian knot and makes the assumption in the name of science!

Breathing Apparatus.—All animals must use free oxygen. Some obtain it from solution in water, others from the air. Many "water-breathers" absorb it through the general surface of the body; some have tufts that serve as gills, others have flat gills at the sides of the body; others, gills located "in cavities

covered by the sides of the shell''; still others. flat, fringed gills like those of most fishes, or pouch-like gills scattered along the sides of the neck. ''Air-breathers'' have either tubes, sacs or lungs. Insects have a system of branching air-tubes extending through the cavity of the body; scorpions and spiders have pulmonary sacs; snails have a breathing cavity on the right side of the neck; amphibians have gills when young and generally lungs only when mature; and the higher vertebrata have lungs alone. From the above facts it is evident that the breathing apparatus of different animals involved many separate evolutions if that was the method. It is equally evident that we are entirely ignorant of the many necessary steps involved in these many evolutions.

Mr. Darwin says that ''in many cases it is most difficult to conjecture by what transitions many organs have arrived at their present state,'' and yet he does not hesitate to draw a definite conclusion as to how they have been derived. His process reminds one of the game: ''Heads up, I win; tails up, you lose.''

Analogous and Homologous Organs.

As to objections to the theory of evolution, Romanes says: If ''similar organs or structures are to be met with in widely different branches of the tree of life, . . . this would be an objection fatal to the theory of natural selection, supposing these organs or structures in the cases compared are not merely analogous, but also homologous.'' ''Mr. Mivart has instanced the eye of the cuttlefish as not only analogous to, but also homologous with, the eye of a true fish—that is to say, the eye of a mollusk with the eye of a vertebrate. And

he also instanced the remarkable resemblance of a shrew to a mouse—that is, of an insectivorous mammal to a rodent—not to mention other cases."

Wings.—Flying "has been developed independently in at least four different lines of descent—namely, insects, reptiles, birds and mammals." The wings of reptiles, birds and mammals are both homologous and analogous—similar in general plan of structure and function. It is claimed by evolutionists that both birds and mammals have been evolved from reptiles independently of each other. The oldest known bird, the *Archæopteryx,* was a well-feathered bird and had well-developed wings. There is no evidence to prove that it was evolved from a flying reptile—a Pterodactyl. Flying mammals in the form of bats did not appear till much later in geological history, and it is admitted that their wings could not have been derived from Pterodactyl. The improbability that these three analogous and homologous kinds of wings could have been separately evolved in these three widely separated classes of animals is very great.

Natural selection assumes that a structure is preserved because it is useful to the animal that possesses it, and this is based on the idea that it must be useful before it can be preserved. But it is evident that there are many parts of the body that would have been of no use during the many generations of the incipient stages of evolution, and, therefore, some other explanation of their survival must be resorted to.

Electric Organs.—Mr. Romanes claims that the electric organ of the skate presents the greatest difficulty as to the preservation of any organ during its incipient stages. He says: "Electric organs are known to occur

in several widely different kinds of fish—such as the *Gymnotus* and the *Torpedo*. Whenever these organs do occur, they perform the function of electric batteries in storing and discharging electricity in the form of more or less powerful shocks. Here, then, we have a function which is of obvious use to the fish for the purposes both of offense and defense. These organs are everywhere composed of a transformation of muscular, together with an enormous development of nervous, tissue; but inasmuch as they occupy different positions, and are also in other respects dissimilar in the different zoological groups of fishes where they occur, no difficulty can be alleged as to these analogous organs being likewise homologous in different divisions in the aquatic vertebrata."

"Now, in the particular case of the skate, the organ is situated in the tail, where it is of a spindle-like form, measuring, in a large fish, about two feet in length by about an inch in diameter at the middle of the spindle. Although its structure is throughout as complex and perfect as that of the electric organ of *Gymnotus* or *Torpedo,* its smaller size does not admit of its generating a sufficient amount of electricity to yield a discharge that can be felt by the hand. Nevertheless, that it does discharge under suitable stimulation has been proved by Prof. Burdon Sanderson by means of a telephone, for he found that every time he stimulated the animal, its electrical discharge was rendered audible by a telephone. Here, then, the difficulty arises. For of what conceivable use is such an organ to its possessor? We can scarcely suppose that an aquatic animal is more sensitive to electric shocks than is the human hand: and even if such were the case, a discharge of so feeble

a kind taking place in water would be short-circuited in the immediate vicinity of the skate itself. So there can be no doubt that such weak discharges as the skate is able to deliver must be wholly imperceptible alike to prey and to enemies. Yet for the delivery of such discharges there is provided an organ of such high peculiarity and huge complexity, that, regarded as a piece of living mechanism, it deserves to rank as at once the most extremely specialized and the most highly elaborated structure in the animal kingdom.

"Thousands of separately formed elements are ranged in row after row, all electrically insulated one from another, and packed away into the smallest possible space, with the obvious end, or purpose, of conspiring together for the simultaneous delivery of an electric shock. Nevertheless, the shock when delivered is, as we have just seen, too slight to be of any conceivable use to the skate. Therefore, it appears impossible to suggest how this astonishing structure—more astonishing, in my opinion, than the human eye or the human hand—can have ever been begun, or afterwards developed, by natural means of natural selection. For if it be not yet of any conceivable use to its possessor, clearly thus far survival of the fittest can have nothing to do with its formation. . . . On the other hand, seeing that electric organs when of larger size, as in the *Gymnotus* and *Torpedo,* are of obvious use to their possessors, the facts of the case, so far as the skate is concerned, surely do not sanction the doctrine of 'prophetic germs.' The organ in the skate seems to be on its way towards becoming such an organ as we meet with in these other animals, and therefore, unless we can show that it is now, and in all previous stages of its evolution

has throughout been, of use to the skate, the facts do present a serious difficulty to the theory of natural selection, while they readily lend themselves to the interpretation of a disposing or foreordaining mind, which knows how to construct an electric battery by thus transforming muscular tissues into electric tissues, and is now actually in process of constructing such an apparatus for the prospective benefit of future creatures."

"Lastly, we must remember that not only have we here the most highly specialized, the most complex, and altogether the most elaboratively adaptive, organ in the animal kingdom, but also that in the formation of this structure there has been needed an altogether unparalleled expenditure of the most physiologically expensive of all materials—namely, nervous tissue. Whether estimated by volume or by weight, the quantity of nervous tissue which is consumed in the electric organ of the skate is in excess of all the rest of the nervous system put together. It is needless to say that nowhere else in the animal kingdom—except, of course, in other electric fishes—is there any approach to so enormous a development of nervous tissue for the discharge of a special function. Therefore, as nervous tissue is, physiologically speaking, the most valuable of all materials, we are forced to conclude that natural selection ought strongly to have *opposed* the evolution of such organs, unless, from the first moment of their inception, and throughout the whole course of their development, they were of some such paramount importance as biologically to justify so unexampled an expenditure, yet this paramount importance does not admit of being so much as surmised, even where the organ has already attained

the size and degree of elaboration which it presents in the skate."

"In view of all these considerations taken together, I freely confess that the difficulty presented by this case appears to me of a magnitude and importance altogether unequaled by that of any other single case—or any series of cases—which has hitherto been encountered by the theory of natural selection, so that if there were many other cases of the like kind to be met with in nature, I should myself at once allow that the theory of natural selection would have to be discarded."

Natural Selection Insufficient.

Romanes says of natural selection: "If we understand this theory to set forth natural selection as the sole cause of organic evolution, then all the above objections to the theory are not merely, as already stated, valid and formidable, but, as I will now add, logically insurmountable." The above refers to three of the most formidable objections that have been urged against the theory, and these objections can not be met by the theory of natural selection. The three classes of facts that can not be explained by this theory are: "(1) That a large proportional number of specific, as well as of higher taxonomic, characters are seemingly useless characters, and therefore do not lend themselves to explanation by the Darwinian theory; (2) that the most general of all specific characters—viz., cross-infertility between allied species—can not possibly be due to natural selection, as is demonstrated by Darwin himself; (3) that the swamping effects of free intercrossing must always render impossible, by natural selection alone, any evolution of species in divergent (as dis-

tinguished from serial) lines of change." Darwin expressly—and even vehemently—repudiates the claim "that natural selection alone is sufficient." Wallace claimed that natural selection alone was sufficient. Darwin said: "I am convinced that natural selection has been the main, but not the exclusive, means of modification."

Not only Darwin and Romanes have stated that natural selection alone could not be the only factor in evolution, but Spencer, Cope, Mivart, and many other evolutionists, have agreed to this, so that it may be regarded as the common doctrine of evolutionists that natural selection alone will not account for evolution in the organic world.

This makes it necessary to supplement this theory in various other ways, to some of which I will further refer.

Organs of Locomotion.—It seems to me impossible that this theory can account for the preservation of legs, wings and fins, during their incipient stages.

Fins.—According to evolution, fins were the first organs of locomotion among vertebrates. As to how fins originated, we are left to guess. I know that it has been assumed by some that folds (or roughness) of skin occurred, which were gradually evolved through many generations into perfect fins. As to this, there is no evidence worthy of consideration. So far as known facts are concerned, the process of the evolution of fins is purely imaginary. In my opinion, this theory appeals to credulity at almost every step, and yet we are asked to accept it as science. To *imagine* that fins thus originated, and then to accept this as a conclusion of reason, is only to cut one of the many Gordian knots

that occur all along the road of natural selection or of any theory of evolution. I insist that here is plainly one of the crucial tests, the force of which Mr. Darwin does not seem to have recognized. How could fins have originated? The evident answer is: We do not know and we have no means of knowing. The imaginary process of evolution is halted at this point, and is powerless to proceed, except by the use of the imagination. But science demands facts, and not simply a vague theory on which to build. But in this case there is not even a color of facts.

Vertebrates of all kinds never have more than four paired organs for locomotion, and they are either fins, legs or wings. Their normal position is one pair in front and the other aft. In many fishes, however, as in the cod, the ventral fins, which correspond to the posterior limbs of animals, are in front of the pectoral fins, which are nearer the dorsal region. The various positions of fins demand more than one origin for these organs, more than one evolution, if we imagine that they were evolved. But this, as already seen, increases the difficulty, since it includes both homology and analogy at the same time. Of course it may be *imagined* that fins have simply been shifted instead of having been separately evolved.

Legs.—It is claimed by evolutionists that fins by evolution have given rise to the limbs of higher forms. In this case it would be expected that an evident homology would exist between fins and the limbs of higher vertebrates. On this point Huxley says: "The limbs of fishes have an endo-skeleton, which only imperfectly corresponds with that of the higher Vertebrates. For while homologues of the cartilaginous, and even of the

bony, constituents of the pectoral and pelvic arches of the latter are traceable in Fishes, the cartilaginous, or ossified, basal and radial supports of the fins themselves can not be identified, unless in the most general way, with the limb-bones, or cartilages, of the other Vertebrates." If Huxley, who was an evolutionist, could not see the homology between fins and legs, with his great knowledge of comparative anatomy, it probably does not exist. But evolution assumes the homology because this is absolutely necessary.

It is easy to say that fins were changed into legs, and these into wings, legs and arms of the higher groups of vertebrates. The geological record, which we can not now consider, gives no trace of evidence as to how these changes took place. But this universal science (?) must push its way along and not let anything stand in its way.

Wings.—It is admitted by evolutionists that wings have had three distinct origins—the wing of the pterodactyl, of the bird and of the bat. They are all both homologous and analogous. The wing of the pterodactyl, a flying reptile, was made by stretching a membrane from the tail and leg to the arm and one of its four fingers enormously elongated; the wing of a bat, a flying mammal, consists of a membrane stretched from the tail and leg to the arm and between four of the five fingers much elongated; the wing of the bird consists of feathers attached to the skin, which is supported by the bones. We are left to try to imagine how each and all these wings came into existence. Evolutionists make much of the fact that the wings of birds are at present in various conditions of development. The wings of the apteryx are the merest rudi-

ments, and are of no use; those of the penguin serve merely as fins in water and as legs on land; those of the adult loggerhead duck help it to skim along the surface of the water, but are useless for flight; those of the ostrich may aid it in running; while the wings of most birds serve the purpose of flight.

It is commonly assumed that birds that can not fly have lost the power of flight by decrease of the size of the wings. We do not know that this is true, but this may readily be granted without decreasing the strength of the argument against evolution. It is evident that the loss of an organ or its decrease in size, owing to disuse, is no evidence as to how an organ can come into existence in the first place. This last is that for which evolutionists must account, and not simply assume. It is easy to see that to start an organ when none exists, and preserve it through its long useless stages, is entirely different from gradually losing an organ that already exists. Besides, if functional organs have disappeared, a vestige always remains showing that they once existed. It is not safe, however, to infer that a mere rudiment indicates that an organ was once functional, as in the case of mammæ in the male of genus homo. The origin of the two divisions of the birds has not been satisfactorily explained by the theory of evolution. There are struthious birds, destitute of a keel on the breast-bone, and the carinate birds that have a keel. The ostrich, cassowary, emu, rhea, apteryx, dinornis and others belong to the first division, and other living birds to the latter. The skeletons of these two branches of birds differ from each other in important respects. Mivart says: "Now, birds and reptiles have such and so many points in common that Darwinians must re-

gard the former as modified descendants of reptilian forms. But on Darwinian principles it is impossible that the class of birds so uniform and homogeneous should have had a double reptilian origin. If one set of birds sprang from one set of reptiles, and another set of birds from another set of reptiles, the two sets could never, by 'natural selection' only, have grown into such a perfect similiarity; to admit such a phenomenon would be equivalent to abandoning the theory of 'natural selection' as the sole origin of species. This theory forbids the evolution of birds from reptiles along two separate lines, and it equally forbids the evolution by natural selection of one division of the birds from the other.''

This difficulty has not been satisfactorily explained in the interests of evolution, but the theory halts not at this. Another Gordian knot must be cut.

II

EVOLUTION

THERE is a general stampede in certain quarters to make use of the word "evolution." The word has become a talisman, a fetish, a charm, a mascot, in some cases a god. Its adorers ought to have prepared, and stamped with the word "evolution," some special badge to be worn publicly over the heart of each disciple of this god.

But what does the word "evolution" mean to these people? It may mean any one of a hundred things. To the average student it means: "I am up to date. I have adopted the scientific method. I am marching in the forefront of progress. I am in conformity with the scientific spirit of the age. I stand with the progressives. I am not afraid of being called an old fogy. I am not afraid of being looked upon as a back number. I can look all the great scholars and scientists in the face and say, 'I am glad to be with you.'" All of these things, and many more that might be added, give the young fellow in college a splendid opinion of himself and of his attainments.

He looks at the cattle and horses and hogs and chickens, and other domestic animals, and says: "Yes, evolution is true. I see it going on among these animals all around me. I need no further proof. Living things have been in the world for millions of years, and they

have progressed in structure from simple forms up to man. It is the most sensible solution of the problem to believe that higher forms have come by evolution from lower forms. This is the natural way, and God does all things through natural means and by natural laws. Besides, there is the plain case of the evolution of the modern horse, and if God evolves one species, he evolves all."

This is a fair summary by the average person who accepts the theory of evolution. It will be noticed that the great difficulties with regard to evolution are not considered at all in the above statement. Ignorance of the facts bearing on the theory, and of the many objections to it, is a source of bliss to the average evolutionist.

I will consider briefly the evolution of the horse, which has been ridden unmercifully by the fraternity of evolutionists. Chamberlin and Salisbury, of Chicago University, in their "College Geology," say: "The Miocene was a great epoch in the evolution of the horse *Anchippus, Protophippus, pliohippus (Merrychippus), Hipparion,* and other genera, flourished and deployed into forty or more species." Here four genera of horses are named, and others referred to that are not named. Forty or more species of these genera have been found in the United States. According to the claims of evolutionists, the known species are few compared to the unknown. There must have been a great number of species. It is a universal rule among animals that a cross between two distinct species is not fertile, but sterile. The horse, the ass and the zebra are distinct species, and, if they cross at all, the offspring (mules) will not reproduce. The great number of species of

extinct horses would, therefore, be of no value in the evolution of the horse, for the crosses would have been sterile. The evolution would have had to take place in a serial line, but here we encounter the difficulties of merging and the production of cross-sterility that always exist.

But the great question with regard to the evolution of the horse is not the loss of toes, but it is, How did the horse get his four or five toes in the first place? Let it first be established that the four or five toed horse was produced by evolution, a thing that has not been done. The loss of parts in certain cases might be conceded for the sake of argument, but this is in no way an explanation as to how the parts came into existence. There is much camouflage in trying to make loss of organs an explanation of their origin.

Before calling attention to some of the applications of the word "evolution," I will give some idea of its use in the larger and the largest sense. Le Conte defines it as follows: "Evolution is (1) continuous *progressive change,* (2) *according to certain laws,* (3) by means of *resident forces.*" The development of the embryo of a hen's egg into a full-grown cock is, he says, the type of all evolution. Also: "The process pervades the whole universe, and the doctrine covers alike every department of science—yea, every department of human thought." This statement is accepted, probably, by most evolutionists. As to philosophical evolution, the Standard Dictionary says: "The cosmological theory that accounts for the universe and its contents by the combination of separate and diffused atoms existing originally in a condition of absolute homogeneity." Also: "Specifically, in biology: (1)

The series of steps by which a germ or a rudimentary part becomes an adult organism or a fully developed part; the succession of changes by which a germ passes from a simple to a complex condition; (2) the derivation or the doctrine of the derivation of all forms of life by gradual modification from earlier and simpler forms or from one rudimentary form.'' This last is the scope of Darwinian evolution.

Darwin deals especially with organic evolution. He claims that all living things have been developed from a few simple, original forms or from one. Natural selection is the principal part of his theory. He says: ''Natural selection acts solely through the preservation of varieties in some way advantageous, which consequently endure.''

E. D. Cope defines evolution as follows: ''The doctrine of evolution may be defined as the teaching which holds that creation has been and is accomplished by the agency of the energies which are intrinsic in the evolving matter, and without the interference of agencies that are external to it. It holds this to be true of combinations and forms of inorganic nature, and those of organic nature as well. Whether the intrinsic energies which accomplish evolution be forms of radiant or other energy only, acting inversely as the square of the distance, and without consciousness, or whether they be energies whose direction is affected by the presence of consciousness, the energy is property of the physical basis of tridimensional matter, and is not outside of it according to the doctrine we are about to consider. . . . The science of evolution is the science of creation.''

Le Conte, Cope, Osborn, Spencer and others teach that the forces resident in matter are the efficient cause

of evolution. Evolution in this case can be nothing more than a system of naturalism, which fails to account for life and for all psychic phenomena. It can give no scientific reason for the existence of the mind of man.

He who accepts organic evolution, including the evolution of man and of all human history, must of necessity accept cosmic evolution. I have elsewhere called attention to the fact that all changes in matter are due to the action of forces. A study of the changes, by evolution or otherwise, during the past long ages is a question of forces and their laws of action, and the question as to whether the forces in the inorganic world are sufficient to account for all the facts in the living world, is forced upon us. Before life appeared on the earth there was an immense time during which the world was undergoing changes that would fit it to sustain low forms of life. From the time of the oldest fossils, especially along the line of vertebrates, there was progressive movement in organization up to man. The fact of progress does not necessarily indicate that it was by way of evolution.

Cosmic evolution is a universal process which includes all changes, all events, material and immaterial, that occur. It is well to bear in mind the figure of a tree as representing correctly the whole process of organic evolution. The fact that there must always be *continuity* in the action of the forces of evolution in the organic world, is fundamental. This must not cease, nor at any place in the line be broken, otherwise it can not in the proper sense be called evolution. A break at any place in the organic world would terminate the process along that line. There has been a

living genetic connection between all living beings as there is between the various parts of a tree.

We speak of the evolution of the earth before living things appeared, when apparently nothing was being done except by the ordinary forces of nature acting on the inorganic world. Chemical actions among the materials, cooling by radiation of heat into space, changes in the earth's crust due to the force of gravitation, innumerable electrical actions among the materials of the earth—these were the principal changes that were taking place.

"By means of resident forces," according to many, the next step in evolution took place; namely, the production of the simplest living things. At this point we must, from the scientific view, say that there is an absolute blank—that nature can not produce a living organism from inorganic materials alone—that living things from living things is the only known fact. Evolution, using simply the forces of the inorganic world, is not able to force its way into the living world. Something more was necessary. We speak of the *vital* force in all living things. The word "evolution" must be used in a modified sense when we get into the living world. A new force has appeared. Cope accepts "vital force."

We imagine that the process continues into the animal world, where the sense of feeling is universal. Evolution is absolutely helpless to account for the origin of feeling in the animal world. It must attach a new idea to the forces involved in the process, as evolution progresses through many sensations, special senses, a multitude of instincts, and all the faculties of the human mind. As new and higher psychic powers

come into being, evolution must acknowledge her helplessness to account for them and must change her assumptions repeatedly as steps upward are taken. And yet, evolutionists call the whole process through the psychological regions "evolution."

There is no continuity through this region in passing from one kind of sensation to another, and from sensations to instincts, and from one instinct to another, and on to the highest powers of man. Unless it can be shown that psychological powers constitute a genetic chain through the animal kingdom, including man, from the lowest to the highest powers, then the continuity which evolution demands is broken. It is impossible to prove that such continuity among psychological powers ever existed, and so the word "evolution" ought not to be applied to the whole process.

The gap between the mind of man and the powers of even the highest animals is immense, and it has not in any way been bridged by evolution. Even if we assume theistic evolution as the method, and that God is doing all by natural laws through natural causes, the gaps exist in the process as they would in atheistic evolution, and demand special acts of the Creator to bridge them. These acts are miracles. A miracle is not a lawless event, but it comes within the domain of God's spiritual laws.

As to materialistic science accounting for the whole process of creation, Le Conte says: "Let no one imagine, as he is conducted by the materialistic scientist in the paths of evolution from the inorganic to the organic, from the organic to the animate, from the animate to the rational and moral, until he lands, as it seems to him, logically and inevitably, in universal

materialism—let no one imagine that he has walked all the way in the domain of science. He has stepped across the boundary into the domain of philosophy. But on account of the strong tendency to materialism and the skillful guidance of his leaders, there seems to be no such boundary; he does not distinguish between the inductions of science and the inferences of a shallow philosophy; the whole is accredited to science, and the final conclusion seems to carry with it all the certainty which belongs to scientific results." Surely it is a false philosophy. Materialism fails all along the line and it offers no nexus between the inorganic world and mind.

With regard to the mind of man, Le Conte says: "In man alone, and only in his higher activities, *psychic* changes precede and determine the brain changes. In man alone brain changes are determined not only by *external* but by *internal* impressions. Man alone perceives not only objects—*material things*—but also relations and properties abstracted from the objects—that is, ideal things; and, moreover, not only relations between objects, but also relations between relations or ideas. In man alone there is an inner world—microcosm—the *things* of thoughts, ideas, etc. This *self-acting power* of spirit on *the things* of *itself*, instead of reacting merely as played upon by external nature, is characteristic of man, and is a necessary result and a sign of severance, partial at least, of physical bond with Nature."

Again: "Self-consciousness is the direct recognition of the one reality, spirit, of which all others are the sign and shadow—the true reality which underlies and gives potency to all abstractions or ideas." Again:

"Life is a higher form of force than the physical or chemical. Life-phenomena are therefore super-physical, and if we confined the word 'Nature' to dead Nature they would be supernatural. . . . Man alone is a *child of God* as well as a product of Nature." Also: "Without spirit-immortality this beautiful cosmos . . . would be precisely as if it had never been—an idle dream, an idiot tale signifying nothing. I repeat, without spirit-immortality the cosmos has no meaning."

We have been considering the use of the word "evolution." We may admit that laws, or methods, exist in all departments of nature, but this does not mean that methods in a higher department are the product of a lower department; it does not mean that the higher methods grow out of the lower; it does not mean that there is genetic connection by way of evolution, beginning with the dead world and ending with the human mind. The word "evolution" can not be properly applied to the whole process, because continuity fails in innumerable places.

The evolution of a mature chicken from the germ of a hen's egg is a familiar occurrence. In this case the continuity is unbroken. The evolution of varieties under domestication by man's selective power is well known. All varieties of the common fowl are cross-fertile with each other and with the parent form. Cross-sterility does not mark them as species. The case of the common fowl marks the limit of our knowledge of the evolution of species. It has not been shown that any species has been evolved. Darwin's son, writing the biography of his father, says: "We can not prove that a single species has changed." Much less can it

be shown that the great groups, sub-kingdoms, classes, etc., have been produced by the process of evolution.

The word "evolution" is used in all fields of human thought and activity. We speak of the evolution of the stone implements during the stone ages; evolution in the art of fishing, in the chase, in war, in agriculture, in household furnishings, in clothing, in methods of travel, in railroads, telegraphs, telephones, in human government, in medicine, in surgery, in every branch of science; in printing, in language, in laws, in literature—in fact, the word "evolution" is used to include every branch of human thought and activity. It is convenient, and is one of the most satisfying words, to the average mind, that of late years has come into general use. The reason why it satisfies is that it seems to explain a great number of difficulties. I am sure that the word as commonly used is very elastic and that it can be accommodated to many purposes—like a piece of rubber, it can be pressed into a sphere, a cube, into any geometric shape, elongated, widened, rendered more pliant or more rigid, as occasion may require.

But, as I have endeavored to show, the word "evolution" has different meanings in different parts of creation. If we consider the growth that has taken place in the art of printing and the printing-press, and call it evolution, we can see that the word does not have the same meaning that it has when applied to the organic world. The Chinese had some kind of printing far back towards the beginning of the Christian era. Various countries in Europe, and especially Germany, were doing more or less printing, imperfectly, six or seven hundred years ago. By the year 1454 it is said that Gutenberg's labors had brought printing to a

"perfect state at Mainz." "The shape and manufacture of the types used as early as 1470 do not seem to have differed materially from those of the present types." By 1480 "it appears that steel, brass, copper, tin, lead and iron wire were all used in the manufacture of types at that period." Letters made of wood were used before those of metal.

The first printing-presses were small and crude, and were worked by hand. Since Gutenberg's day thousands of different men have worked improving the printing-press in all its details, until now the huge presses of great complexity weighing many tons turn out hundreds of thousands of many-folio newspapers printed, pasted and folded, all in a few hours. And then the linotype machine has done much to facilitate the preparation of type.

With regard to the improvements of the printing-press, each one who aided made some improvement in the press as it already existed. Each availed himself of the labors of his predecessors. The progress at every step was due to the human mind, but it was not evolution in the proper sense of the word. The necessary continuity in time, without any break in the mental processes involved, was entirely absent. The men who made the improvements in the printing-press were scattered along through hundreds of years, and many years frequently elapsed before any great improvement was made. The word "evolution" can not be applied here as it is in the organic world. In the organic world, if evolution took place, and if the living species have been evolved, it was necessary that living physical continuity should have existed through all the past ages from the oldest living thing till the present time.

Such continuity in the living world by the forces of evolution and by genetic connections of evolving organisms was absolutely necessary. In the vast field of human progress no mental continuity has existed or could exist. In the evolving physical world the connection must be physical. In the world of mind the progress is due to the action of isolated individual minds which are separated in time and space. In the world of mind each one is a free agent, and the improvements in all fields of human interest are due to freedom of thought and freedom of execution everywhere. The action of the mind, including free will, is not on a level with the action of the forces in the world below.

Evolution in the lower world, where things run in mechanical grooves, can not be like the evolution in the world of mind, where events are determined by thought and free will. One event does not mechanically grow out of another in human affairs, but the mind of man takes advantage of existing things as a foundation for greater structures. What it adds to any existing thing is an original creation, and not a blind mechanical result. The word "evolution" includes not only the idea of change, but of continuous, unbroken change, and also the idea that certain invariable forces are producing the changes that take place. The word as used is misleading because of the variable meanings attached to it.

III

THEISTIC EVOLUTION

THE first great evolutionists, beginning with Darwin, and including Huxley, Spencer, Tyndall and others, based the theory of evolution on matter, motion and force. It was purely a system of naturalism that did not recognize God, nor the Bible, nor what the Christian regards especially as the supernatural. The process, being strictly scientific, necessarily excluded miracles. Evolution was, according to their view, "the science of creation," by means of "resident forces"; that is, by means of forces that reside in, and are connected with, matter.

Le Conte has defined it as follows: "Evolution is (1) *progressive change*, (2) according to *certain laws*, (3) by means of *resident forces*. . . . The process pervades the whole universe, and the doctrine concerns alike every department of science—yea, every department of human thought."

The process is universal. It includes all that has occurred in the past and will include all in the future. It is, according to theistic evolution, God's one and only way of doing things. In the organic world it claims that all species of animals and plants have been evolved from one or a few simple original forms. The imaginary tree of life would include all organic beings if evolution has taken place. The process has been

continuous, unbroken from age to age. There were "no gaps" in the process. A break in the physical continuity would have ended the work of evolution at that point.

No cosmic evolutionist can accept a miracle at any point of the natural process. To him a miracle as a part of evolution would be unthinkable. If a miracle could occur at all, it would have to occur within the process of evolution, as a part of it. A miracle would be a break in the continuity which the theory demands. It has been said that evolution is "the process through which God originated everything." This is the correct idea of the process.

The theologians became alarmed at the infidel evolutionists because they thought that science had proved that all things were produced by evolution. They began to consider how they could reconcile theology and *science.* They imagined that evolution was an established science. They said: "We will change the lion into a lamb by changing its name." And so they called it *theistic* evolution, but accepted the agnostic or atheistic *method* of evolution and began to sleep comfortably over their wisdom (?). But evolution is not a science; it is only a theory that can not be proved to be true.

There can be no conflict between Christianity and true science, for God is the author of both. There is irreconcilable conflict between Christ and the cosmic *theory* of theistic evolution. This theory is not *science.* When it becomes an established science, Christian theologians will be obliged to "fold their tents and hie away," and betake themselves to other callings. The reason for this is evident; God can not work by two

methods that are opposed to each other in principle. If theistic cosmic evolution includes all that God does, then everything that he does must be a part of the process.

Much of the Bible, much of Christ's life, can not be explained by the process of evolution. In what I have published, I have stated that miracles can not be included as a part of evolution, and I have called upon theistic evolutionists to explain how the miracles of the Bible, or any miracle, can be included as a part of evolution. No answer to this has come from any source. I have stated that if this question can be satisfactorily answered it will go far towards reconciling Christ and theistic evolution.

Many have thought that *theistic* evolution is *Christian* evolution. They have said, if God is in it, it must be all right. A man may be a theist and not a Christian. Such a one accepts God, but not Christ. John Fiske was a theistic evolutionist, but he did not believe in miracles. Most of the Jews are theists, but not Christians. If they are theistic evolutionists, they are not Christian evolutionists. It is evident that theistic evolution stops short of being Christian evolution. This distinction is highly important, for believing that the two are identical has led many astray, so that they regard it as a matter of indifference whether or not they accept evolution.

I have said that theistic evolution is conceivable; but Christian evolution is inconceivable. The latter is true because evolution can not include Christ and his miracles as a part of the process. Christ's life here began with a miracle. In Luke 1:35 we read: "And the angel answered and said unto her, The Holy Ghost

shall come upon thee, and the power of the Highest shall overshadow thee: therefore that holy thing which shall be born of thee shall be called the Son of God." But, says theistic evolution, this miracle did not occur, and Jesus was only a man with a human father. He could not speak with authority as the Son of God who came down from heaven; as "God manifest in the flesh"; as the one who said, "I came down from heaven to do my Father's will." He could not, as a part of the universal process of theistic evolution, perform miracles; therefore his body did not rise from the dead, and, therefore, he did not command his apostles to "go into all the world and preach the gospel" after he arose from the dead, and did not eat with them, and talk with them and teach them. Jesus being only a man, baptism and the Lord's Supper have no divine authority and there is no propitiation in his blood. Jesus not having risen from the dead, this scene could not have taken place. Acts 1:10, 11: "And while they were looking stedfastly into heaven as he went, behold two men stood by them in white apparel; who also said, Ye men of Galilee, why stand ye looking into heaven? this Jesus, who was received up from you into heaven, shall so come in like manner as ye beheld him going into heaven."

Jesus was not evolved from the grave by the process of evolution, for this would have been a miracle. He did not say to his apostles after his resurrection (Luke 24:39): "See my hands and my feet, that it is I myself: handle me, and see; for a spirit hath not flesh and bones, as ye behold me having." Not having risen, he did not say to his apostles (Luke 24:49): "Tarry ye in the city, until ye be clothed with power from on

high." Nor did he give (Acts 1:2-5) "commandment through the Holy Spirit unto the apostles whom he had chosen: to whom he also showed himself alive after his passion by many proofs, appearing unto them by the space of forty days, and speaking the things concerning the kingdom of God: and, being assembled together with them, he charged them not to depart from Jerusalem, but to wait for the promise of the Father, which, said he, ye heard from me: for John indeed baptized with water; but ye shall be baptized in the Holy Spirit not many days hence."

The Holy Spirit does not do its work by evolution. Jesus was not raised from the dead and could not have ascended, as above stated, and he could not have sent the Holy Spirit on the day of Pentecost, nor could the apostles have spoken "with other tongues as the Spirit gave them utterance." The people were not "confounded because that every man heard them in his own language." The miraculous occurrences on the day of Pentecost could not have been a part of evolution, because miracles did not occur. Therefore, there was no day of Pentecost anything like that described, and the three thousand were entirely mistaken in what they saw and heard. The church in Jerusalem was established by the thousands of deluded men and women who obeyed the gospel, and it grew and flourished in spite of the errors on which it was founded.

The account, in Acts 3, of the healing by Peter and John of the man lame from his birth, who had been brought and laid daily at the gate of the temple, and who was well known to the multitude, is not true, because these apostles could not have performed that miracle as a part of evolution. The writer was simply mistaken.

Accounts of miracles are scattered through the Bible. They can not be eliminated without destroying the historical value of the documents in which they are found. A miracle does not conflict with natural law, but it is something that natural law alone can not perform—it is *supernatural.* Jesus himself put a high estimate on miracles as testimony. John the Baptist, in prison, sent two of his disciples to Jesus with this question: "Art thou he that cometh, or look we for another? In that hour he cured many of diseases and plagues and evil spirits; and on many that were blind he bestowed sight. And he answered and said unto them, Go and tell John the things which ye have seen and heard; the blind receive their sight, the lame walk, the lepers are cleansed, and the deaf hear, the dead are raised up, the poor have good tidings preached to them" (Luke 7:20-22). This was the most convincing message of his Messiahship that he could have sent to John. Jesus called attention repeatedly to the fact that his works bore witness of him. It is perfectly evident that the denial of Christ's miracles is a denial of Christ himself.

The so-called Christian evolutionists may well be anxious with regard to miracles. He minifies their importance as evidence—he sometimes claims that they are of no importance as evidence at present; claims that they are weights to be gotten rid of, rather than helps. If I were a cosmic theistic evolutionist, I would deny the possibility of miracles, knowing that God can not do all things by the continuous unbroken process of evolution, and also, at the same time, do some of them by a broken process which admits of miracles. I have asked in vain that some Christian cosmic theistic

evolutionist will explain how miracles can be harmonized with his theory. I take it to be impossible to harmonize them.

There are many places in the Bible where God is represented as communicating directly with men in special ways. The conversation of God with Moses at the burning bush was not by evolution (Ex. 3:4-6): "God called unto him out of the midst of the bush, and said, Moses, Moses. And he said, Here am I. And he said, Draw not nigh hither; put off thy shoes from off thy feet, for the place whereon thou standest is holy ground. Moreover he said, I am the God of thy father, the God of Abraham, the God of Isaac, and the God of Jacob." Ex. 3:14: "And God said unto Moses, I AM THAT I AM: and he said, Thus shalt thou say unto the children of Israel, I AM hath sent me unto you."

Ex. 20:1: "And God spake all these words, saying," and then follow the ten commandments that God gave. Ex. 20:22: "And the Lord said unto Moses, Thus shalt thou say unto the children of Israel, Ye yourselves have seen that I talked with you from heaven." God did not give the commandments by the process of evolution.

The call of Abraham; the announcement from heaven at the baptism of Christ, "This is my beloved Son;" the message on the Mount of Transfiguration, "This is my beloved Son, . . . hear ye him," and the voice of Jesus at Saul's conversion, "I am Jesus whom thou persecutest," were not due to the process of evolution. God's revelations to men, as recorded in the Bible, were supernatural, and not by continuous evolution.

According to the theory of evolution, there can be no answer to prayer except a subjective answer due to a reflex action upon the mind of the petitioner. An objective answer, such as that to Elijah when God sent down fire from heaven onto his altar, required a special act of God, which evolution could not perform. To the man who believes in God the subjective answer might be as effective without God as with him.

Many of those who accept evolution as a working hypothesis, do so because they say that they want to conform to the thought of the age. With regard to this it may be said that to conform to it as a working hypothesis is to accept it as established science. Teachers who apply it to the evolution of the Christian religion proceed as if the religion of the New Testament has been evoluted from lower forms of religion. They take up the crude ideas of various savage tribes and try to show how, by evolution, the Christian religion has come to man. The very idea of the one God, according to them, has come by way of evolution into the mind of man. In this they fail to tell us how this idea came to the one little people so early, before science had given to the world the idea of the unity of nature, and why this idea persisted so doggedly among that special people, while all other nations, even the cultured Greeks, that surrounded the Jews, were polytheistic.

The Bible is the one supreme, triumphant book on monotheism, as well as the one book on Christianity. To place the origin of that book on the basis of naturalism, as a product of the process of evolution, is to repudiate all its highest and holiest claims. The Christian world will not stand for this, however subtly and

plausibly its claims may be urged. The great danger here is that indifference which grows out of ignorance of the real situation. The Christian world believes in the Bible so inspired that all of its messages can be relied on as being true, and that many of them are supernatural revelations of God to man.

That which strikes one most forcibly on reading the Bible is the unity which the one-God idea gives to all of its sixty-six books, written through a period of sixteen hundred years, by forty different authors. These writers and the great characters of whom they wrote, who are recognized as being among the greatest men who ever lived, believed that God spoke through them. Adam and Noah and Abraham, Isaac and Jacob, Moses and Samuel, Elijah and Elisha and David and Solomon, Isaiah, Jeremiah, Ezekiel, Daniel, and all the other prophets, were men among that little people who did more to establish the idea of the one God in the world than all the mighty hosts of other nations. It is said that "the word of the Lord" came to this one and to that one. It is said that God communicated personally with these men. They all believed that God revealed himself to them. It would be strange indeed if all these mighty men, who stand highest for intellect and character, should have been mistaken, and entertained the strange delusion that God revealed himself to them. Was it simply a sublime streak of insanity that ran through the minds of these greatest men of the Jewish race, or did "the word of the Lord" come to them?

We can easily imagine that one man might be mistaken, but when it comes to a large number of the greatest minds, and extending through hundreds of

years, we can not believe that they were all mistaken. In defense of the idea of the one God who reveals himself to men and cares for them, this little nation of Jews battled against the great heathen nations around them and poured out their blood freely in the name of the great Jehovah. They believed, as the prophet said, "Not by might, nor by power, but by my Spirit, saith Jehovah of hosts."

In the New Testament we find John the Baptist as the forerunner of Christ; Jesus as the supreme head; Peter, James, John, Paul, and the other apostles—a remarkable group, such as we find nowhere else in the religious world—establishing a new religion, which Christians believe is destined to revolutionize and save the world. These men all believed in miracles, believed that God made known his will to men, as on the day of Pentecost, through his Holy Spirit, and in a way that could not have been a part of theistic evolution. The life of Jesus is crowded with miracles. They are so interwoven as a part of his daily life that they can not be separated from it without denying his claims. He who accepts Jesus must, of necessity, accept his wonderful works. The man who seeks a gospel by evolution must go outside of the New Testament.

It is evident that the forty writers of the Bible all believed that God made known his will to them by revealing himself in ways that could not be mistaken. They called upon him in prayer and he answered their prayers, sometimes by visible miracles. The apostles asked Jesus why they could not cast an unclean spirit out of a boy. He said: "This kind can come out by nothing, save by prayer."

We must accept the fact that the great characters of the Bible, and the forty writers of this book, could not all have been mistaken when they claimed that God communicated with them, gave them his word and answered their prayers. "The word of the Lord came" to this one and to that one as is recorded many times in the Old Testament. And so Christians gladly accept the Bible as the book of God, as the one-God book.

IV

EVOLUTION AND THE PUBLIC SCHOOLS

THE teaching of evolution in the public schools is a matter of vast interest to the public. If it is an established science, by all means let it be taught; but if it is only a theory, let it be fully discussed from the evidence, by teachers who are competent, and with those who are mature enough and well enough informed to understand what they are doing. Practically all of the teachers of this theory at present have accepted it as a dogma, and are not well enough acquainted with the facts to teach the subject in the proper way. The pupils, immature as they are, are only empty vessels ready to receive whatever the teachers put into them. And so the dogma, evolution, is being widely propagated in our high schools, and, in some places, in the grades below, and in our normal schools, among the thousands of immature girls and boys who are to become the future teachers in our common schools, who will teach it dogmatically as they have received it from their dogmatic teachers. These teachers are especially fond of dwelling on what they regard as the evolution of man from some animal ancestor, and of connecting him with the brute creation, both in his physical and mental being. According to the teaching of these dogmatists, it becomes highly important to understand that man's body bears all the stamps of the brute, but that

especially the mind of the child during its development manifests in many ways the qualities of its brute ancestors. That it is most important to study the mind of the child in education, during all of its stages of growth, no one will doubt. That it is necessary to seek a brute origin for these powers in the mental make-up of the child is simply absurd. I am sure that nothing is gained in education by trying to connect the human being, both in body and in mind, with the brute creation. And yet this is being widely done, with the claim that it is a great help in education. Pestalozzi, and others who began to revolutionize child education, did not need the dogma, evolution, in order to help them understand the mind of the child.

"The Normal Child and Primary Education," by Arnold L. Gesell, Ph.D., Department of Psychology, Los Angeles State Normal, was a book in use in the Los Angeles State Normal School as a text-book three years ago, when I was living in Los Angeles. The author of this book does not hesitate to dogmatically declare that man has come by evolution. "*Pithecanthropus erectus*" "represents at least man's immediate precursor." How glibly and with what self-assurance this teacher of future teachers writes, knowing that it will be accepted by most of his readers without question. Hear him again: "Man is not descended from a monkey. Man and ape represent each a distinct species, equally descended from a common generalized prototype. This generalized human-simian ancestor was the remote precursor of man, and lived in Miocene times, say a million years before *Pithecanthropus erectus.* It should also be said that in this chapter we are trying to tell a simple narrative, and not attempting a critical

discussion of the moot questions concerning the history of man." Why did not the author say that the above is purely imaginary?

The author urges the free use of the imagination to picture the facts of science. He says: "Should we not have the courage of thought to picture to ourselves the character of these early migrations and immigrants?" "Agile in their native homes, they walked the earth with clumsy gait, their broad shoulders stooping, their knees bent." What splendid facts he makes by the use of his imagination! And this is the "scientific method"! Again he says: Man's "complete occupation of the world was probably under way by the close of the Tertiary epoch." It has been shown by a large number of the best authorities that man did not exist till after the Tertiary—that he appeared not earlier than the close of the glacial—epoch, estimated to have been from five to ten thousand years ago in America. I will quote some of these further on. Again he says: "The home of most primitive man was like that of the Swiss Family Robinson. Not only in appearance, but to some extent in habits, he must have resembled the nearest kin. . . . Some writers have even questioned whether he had the cortical neurons that would enable him to talk. At any rate, his utterances were thick and clung to the base of his tongue; for nimbleness and subtility of articulation go with the development of abstract ideas, of which he possessed very few. His life was probably arboreal until the increasing cold climate drove him into caves. . . ."

"With the close of the Tertiary epoch a great meteorological and geological change came over the earth, which had a powerful effect upon the natural

history of man. Mysteriously from the north crept a great ice cap, which covered a good part of the northern hemisphere with glaciers and icebergs. As mysteriously it retreated, to reappear at least once again. In the warm interglacial period—a duration of perhaps five hundred thousand years—the first achievements of human culture were made. In this period fall the eolithic and paleolithic ages—the latter lasting, according to Keane, about three hundred thousand years. Even though these figures are but an estimate, they will serve to impress the thoughtful reader with the comparative brevity of our historical era, the ancient lineage of our civilization, and the very primitive ancestry of our modern child."

The above are samples of *imaginary* facts with which the author loads two of the first chapters in this book for making known to young teachers the *scientific* evolution of man (?). Why should the public who supports these schools suffer such unverified and unverifiable stuff to be crammed dogmatically into the minds of those who are to teach the rising generation, and through them to teach the generations to come? All science may well be taught when needed, but these things are not science, but worthless theories, and the teaching of them in the usual way is a waste of time. This author, having written two chapters as to the evolution of man, in a later chapter continues as follows: "The present is born of the past and the past abides in the present, and to understand the present we must appreciate the past. That is the excuse of the two foregoing chapters, which, although they may be but rough, surely emphasize the fact that the child is the product of a most remote and remarkable antiquity.

How far back we trace his pedigree is a matter of taste. Surely we are descended from the neolithic Europeans who lived over a score of millenniums ago, and these in turn were descended from paleolithic ancestors who chipped rough stone implements for some three hundred thousand years. And if we add the vague eolithic period, we may say that the span of man's distinctly human sojourn on the earth measures a half-million years. Some would multiply this by two, and if we include the postulated Miocene precursor of man, we shall have to multiply by five or six or even more."

What delicious nonsense to serve up to teachers! and in the name of *science!* What a vast enlarging and ever-expanding view of our noble ancestors during the past millions of years as they roosted in the tree-tops, and with thickened tongues jabbered vague sounds that bespoke empty pates! Surely we ought to be very thankful for this brilliant imaginary history of our ancestors during the past few millions of years. By this method of writing, any amount of space can be filled.

I will now call attention to the testimony of some leading scientists as to the evolution of man and as to the length of time he has probably been here.

Prof. Alexander Winchell says: "Man has no place till after the reign of ice. It has been imagined that the close of the reign of ice dates back perhaps a hundred thousand years. There is no evidence of this. The fact is that we ourselves came upon the earth in time to witness the retreat of the glaciers. They still linger in the valleys of the Alps and along the northern shores of Europe and Asia. The fact is we are not so far out of the dust, chaos and barbarism of antiquity

as we had supposed. The very beginnings of our race are almost in sight. Geological events which, from the force of habit in considering them, we had imagined to be located far back in the history of things, are found to have transpired at our very doors.

"During the past year [1903] caves were examined in Indiana, Kentucky, Tennessee, Alabama, Virginia, Maryland and Pennsylvania by Professor Holmes, who discovered plenty of human relics, but all of them were Indian." He says: "The bones of all recent animals are found in the caves of this country; likewise those of many animals long ago extinct, such as the giant sloth and large species of tapir. Remains of early inhabitants more ancient than the Indians, however, seem to be wholly absent.

"There is no evidence at all to prove that man is very ancient on this continent. All ascertained facts seem to point to the conclusion that no human preceded the Indians in America. Where the Indians came from is uncertain, but they are surely derived from the same ancestry as the Asiatic Mongols. Their straight, black hair, physiognomy and other physical traits show that."

Professor Holmes says that the great ice sheet spread over northern Asia and America three hundred thousand years ago and did not disappear till about ten thousand years ago.

Prof. George Frederick Wright, one of the highest authorities on the glacial epoch, "has reached the conclusion that it ended not earlier than from seven to ten thousand years ago."

"Prof. Joseph Prestwich collected much evidence which goes to show that the close of the glacial period

falls within the limits of eight and twelve thousand years ago."

"M. Adhemar and James Croll believed that it closed not earlier than eleven thousand years ago."

"Prof. Rollin D. Salisbury and Dr. Warren Upham, among the most recent American geologists, think that seven to ten thousand years ago is a fair estimate."

"In a review article [1904], Dr. Upham, speaking of the post-glacial era, says that from the studies of Niagara by Wright and myself, coinciding approximately with the estimate of Winchell and with a large number of estimates and computations collected by Hanson from many observers in America and Europe, it certainly seems well demonstrated that this period [post-glacial] is from seven thousand to ten thousand years."

Dr. Wm. Andrews thinks that the ice age closed "not further away than from five to seven thousand five hundred years ago."

"Prof. Edward Hall, secretary of the Victoria Institution, London, a specialist on these matters, says: 'Not in one single case in the whole of Europe or America has a trace of man's existence been found below the only deposits which we have a right to assume were developed and produced by the great ice sheets of the early glacial periods.' This is fully concurred in by Professors Hayes, Le Conte, Boyd, C. H. Dawkins, Dr. Gandry, John Evans, W. H. Holmes, M. Favre, and by not a few others."

Prof. W. H. Haynes, a leading American geologist, says: "The evidence for the antiquity of man on the hypothesis of evolution is purely speculative, no human

remains having as yet been found in either Miocene or Pliocene strata.''

Prof. Joseph Le Conte says: ''The Miocene man is not at present acknowledged by a single careful geologist.''

''M. Reinach, author of 'La Prehistorique,' says: 'There are no traces of man anywhere in the tertiary period which brings us to the threshold of historic times.' ''

Professors Chamberlin and Salisbury, of Chicago University, say (''College Geology,'' pp. 922-923, 1909): ''In America, previous to the last decade of the last century, no small mass of prehistoric material of human origin had been assembled and somewhat widely accepted as conclusive of man's presence in America in glacial times. The rise of a more critical spirit in archæologic geology and the application of more rigorous criteria have, however, disclosed weaknesses both in the evidence and in the interpretations put upon it, with the result that man's antiquity in America is a more open question to-day than it was thought to be fifteen years ago.''

The principal reason why this change took place was that it was discovered that there were two stages in the manufacture of flint implements; the first stage took place in the glacial gravels, where the materials for making these implements were largely found; there they were chipped more or less and the chips and poor specimens were left in the gravels. These chips and refuse parts were at first believed to represent man's first efforts at shaping flint implements. This has been found to be a mistake, and it has been learned that these things were only the first stage of manufacture.

It has been found that after this crude shaping at the gravel beds, the implements were finished at home or in other places of manufacture.

They further say (p. 266, etc.): "Sources of good evidence. There are two classes of formations in which good evidences of glacial man, if there was such man in America, are to be sought; viz., (1) in undisturbed till-sheets below horizons affected by surface intrusion, and (2) in interglacial beds where overlain by till and protected from all assignable sources of subsequent intermixture. Both these classes of beds have yielded fossils of other forms of life, and these alone have been seriously considered in the usual studies of the life of the glacial and interglacial stages. These beds have not yet yielded human relics in America, but they should do so in time, if man lived here in glacial or interglacial times." As to man's appearance in Europe, they say: "On the whole, present evidence seems to justify the conclusion of most European archæological geologists, that man was present in central Europe during the latter part of the glacial period, and perhaps even earlier in the period."

The following estimates have been given as to the length of time that has elapsed since the glacial period in America:

Prof. George Frederick Wright. 7,000 to 10,000 years.
Prof. James Prestwich..... 8,000 to 10,000 years.
Dr. James Croll..... not more than 11,000 years.
Prof. S. D. Salisbury and Dr.
Upham ..... 7,000 to 10,000 years.
Dr. Wm. Andrews..... 5,000 to 7,500 years.

Prof. Salisbury, State Geological Survey, N. J. ..... 6,000 to 10,000 years.
Prof. Alexander Winchell ..... 7,000 to 11,000 years.

Considering the above estimates by these men of high standing in archæological geology, and their conclusions after a careful study of the facts, we think that we are justified in drawing the conclusion that man has been here but a few thousand years at most. And yet Professor Gesell announces triumphantly in the most dogmatic way in his book, written especially for the instruction of teachers, that man has been on the earth many millenniums and probably millions of years. And this is all done in the name of "modern science." It is taught as if it were known to be true; taught to the thousands who have neither the opportunity, the ability nor the means to investigate this matter for themselves. One of the greatest values of true science is that it rests on known facts and is free from dogmatism. The teaching in this book, however, to which I refer, is purely dogmatic, and therefore lacks both the facts of science and the scientific spirit, and is, consequently, worthless. Why the public money should be spent to propagate this kind of teaching is beyond my imagination. I believe that the public, when informed, will see that this teaching which is being protected by the word "science," but which lacks entirely the character of true science, will be banished from our public schools.

Professor Gesell accepts without question the Darwinian theory. He says that Romanes called the principle of natural selection "the most important idea ever conceived by man." Romanes makes it clear in what he has written that the theory of natural selection

can not account for evolution. The theory has been largely repudiated by leading scientists.

St. George Mivart, of the University College, Kensington, says: "With regard to the conception as put forward by Mr. Darwin, I can not truly characterize it except by an epithet I employ with great reluctance. I weigh my words, and have present to my mind the many distinguished naturalists who have accepted the notion, and yet I can not call it anything but a puerile hypothesis."

Professor Fleischmann, of Erlanger, one of the recent converts to anti-Darwinism, says: "The Darwinian theory of descent has not a single fact to confirm it in the realm of nature. It is not the result of scientific research, but purely the product of the imagination."

Prof. Ernst Haeckel, a most extreme materialistic evolutionist, bewails the fact that he has been left standing almost alone. He says: "Most modern investigators of science have come to the conclusion that the doctrine of evolution, and particularly Darwinism, is an error and can not be maintained." He then enumerates the names of a number of scientists who have changed their views as to this subject. Dr. E. Dennert, Goette, Edward von Hartmann, Edward Hoppe, Professors Paulson and Rutemeyer, W. Max Wundt and Zoeckler, the last two of whom he calls "the bold and talented scientists" who have abandoned the views of Darwin, though there was a time when they advocated them.

Dr. Goette, the Strasburg professor, has published in the *Unschau* (1903) a natural history of Darwinism, which he says has passed through four stages; namely,

"(1) the beginnings, when it was received with great enthusiasm; (2) the period when it flourished and found general acceptance; (3) the period of transition and sober second thought, when its principles and teachings were called into question; (4) the final period, upon which the scientific world has just entered, and when its days will evidently soon be numbered."

Edward von Hartmann also says that Darwinism has passed through four stages, which he indicates by giving dates, and says that the opposition "gradually swelled into a great chorus of voices, aiming at the overthrow of the Darwinian theory. In the first decade of the twentieth century it has become apparent that the days of Darwinism are numbered. Among its latest opponents are such savants as Eimer, Gustav Wolf, DeVries, Hoocke, Von Wellstein, Fleischmann, Reinke, and many others."

Professor Zoeckler, of the University of Greifswald, says "that the claim that the hypothesis of descent is secured scientifically must most decidedly be denied."

Dr. E. Dennert says: "A survey of the field shows that Darwinism in its old form is becoming a matter of history, and that we are actually witnessing its death-struggle."

Prof. Wilhelm Wundt, of Leipsic, who stands at the head of German psychologists, and in his earlier life supported evolution and wrote books in its favor, later characterized those writings as "the crime" of his youth that would take him all the rest of his life to explain.

Professor Coulter, of the University of Chicago, writing against the natural selection theory of Darwin, says: "(1) It is generally believed that acquired char-

acters are not inherited. (2) The slight variations used by the theory of natural selection can not be continued by continuous selection beyond the boundary of the species. (3) Forms preserved by artificial selection revert. (4) The selection among such slight variations is one that can have no decided advantage."

Dr. Ethridge, of the British Museum, one of England's most famous experts in fossilology, says: "In all this great museum there is not a particle of evidence of transmutation of species. Nine-tenths of the talk of evolutionists is sheer nonsense, not founded on observation and wholly unsupported by fact. This museum is full of proofs to the utter falsity of their views."

"Prof. Lionel S. Beale, physiologist, microscopist, and professor of anatomy and pathology in King's College, London, stands to-day with Lord Kelvin at the head of English scientists, and in this special field is almost without a peer in the world. While addressing the Victoria Institute of London the last of June, 1903, he employed the following words: 'The idea of any relation between the non-living, by a gradual advance from lifeless matter to the lowest forms of life, and so onwards to the higher and more complex, has not the slightest evidence from any facts of any section of living nature of which anything is known. Man is man from the earliest period of his existence as a structureless germ, and there is no evidence that he has descended from, or is, or was, in any way especially related to any other organism in nature through evolution or by any other process. In support of all naturalistic conjectures concerning man's origin, there is not at this time a shadow of scientific evidence.' "

Professor Beale again says: "The life-power, mind and intellect of man make it certain that he is a being absolutely distinct from all other organisms in living nature. But more than this, the action of those bioplasts and tissues belonging to man's nervous system can not be compared with anything else in nature; from which we, perhaps, may be able to deduce what is man's true place and his relation to his Creator."

Prof. John S. Newbury has shown that not one "new species of flora has appeared on earth since the appearance of those that followed the great ice era." He also says: "When, therefore, all these facts and the laws that govern them are taken into account, one is justified in saying that it is doubtful if at any time in the world's history there has been a theory that has gained so great popularity with such an unsubstantial basis as that of the evolution of man from the lower orders."

The Engis skull, perhaps the oldest known, is, according to Professor Huxley, "a fair average skull, which might have belonged to a philosopher, or might have contained the thoughtless brains of a savage."

Wallace says: "But what is still more extraordinary, the few remains yet known of prehistoric man do not indicate any material diminution of the size of the brain-case."

Le Conte says: "The earliest men yet found are in no sense connecting links between man and ape. The Mentone skull is of average or more than average size, while the Neanderthal skull, which is also very ancient, is of lower type, but is in no respect intermediate between man and ape, being truly human."

"Professor Virchow, of Berlin, who was styled the 'foremost chemist of the globe,' and who was the highest German authority in physiology, said: *'It is all nonsense.* It can not be proved by science that man descended from the ape or from any other animal. Since the announcement of the theory, all real scientific knowledge has proceeded in the opposite direction. The attempt to find the transition from animal to man has ended in total failure.' Virchow went so far as to denounce the theory as *dangerous to the state, and demand that it be excluded from the schools.*"

This demand by Virchow was wise, for teaching the evolution of man from the brute is but the culmination of the fundamental principle of the doctrine of evolution that "might is right." The practical effect of this doctrine in the teaching of Germany has shown itself appallingly in the brutal conduct of her soldiers during the last four years. It harmonizes well with "German Kultur," and with the practical atheism that evidently prevails among her rulers, and largely among her masses. It has come to pass that their evolved "superman" is only an incarnate devil, which the Christian world has been compelled to crush beneath its heel. He will be cast out forever. The deification of physical power has had its last chance, and failed. What the prophet said long ago is good for all time: "Not by might, nor by power, but by my Spirit, saith Jehovah of hosts."

This suggests one of the chief dangers of the theory of evolution; namely, that to many minds it seems that God is not needed in the process. And so it has come to pass that a large per cent. of those who accept the theory are practically atheists, and treat with contempt

the Bible as being the revealed will of God to man. That a man may be both a cosmic evolutionist and a theist is perfectly evident, but he may be these and not a Christian. I have discussed this in another chapter.

What of *Pithecanthropus erectus,* the erect monkey-man? "In September, 1891, Dubois, a Dutch physician, discovered a tooth on the island of Java, about forty-five feet below the surface of the earth; one month later he found the roof of a skull about three feet from where he had found the tooth, and in August, 1892, he found a thigh-bone forty-five feet farther away, and, later on, another tooth. A year or two later the world's famous zoologists met at Leyden, and among other things examined these remains. Ten of these leading scientists concluded that they were nothing but the bones of an ape, seven held that they were those of a man, and seven concluded that they were really the missing link connecting man and the ape." Since that time Prof. D. G. Cunningham, of Dublin, one of the highest authorities in Great Britain on questions of comparative anatomy, thinks it probable that these different bones do not belong to the same animal; that a part of them are those of a monkey or baboon, and a part of them human. "Professor Virchow considered the specimen to be pathologic."

These remains are the joy of the evolutionist. From these bones casts have been made, and pictures, and heralded to the world as representing the "missing link." Professor Rutot, of Brussels, has artistically reconstructed the supposed monkey-man that possessed these bones. He has made a bust from his own imagination and made it with all the accessories to render it

attractive as a work of art, but disgustingly beastly from a human point of view. And so men who are panting to find the "missing link" accept this with avidity. It might, however, be well to make haste slowly along this line, and to wait till the leading archæologists, zoologists and comparative anatomists come to some agreement as to the standing of *Pithecanthropus*. This they have not done. The testimony of most of the men cited above was given years after they had knowledge of the discovery of *Pithecanthropus*.

"At the last convention of anthropologists in Vienna, Virchow confirmed what he had previously said, in these words: 'The attempt to find the transition from animal to man has ended in total failure. The middle link has not been found and will not be found. Man is not descended from the ape. It has been proved beyond a doubt that during the past five thousand years there has been no noticeable change in mankind.' "

I have shown elsewhere that the theory of evolution necessarily involves spontaneous generation. Prof. Lionel Beale says further as to this: "There is not a particle of living matter of any kind which can be explained except on the view that it depends upon God. The living particles themselves, and their action during life, can only be reasonably accounted for by attributing them to power created, sustained and regulated from the beginning by the living God. The infinite, designing, directing, sustaining power of the eternal God, as it seems to me, looking from the science side only, must be acknowledged in every kind of living matter and at every period of life."

Dr. Bruner Bey, speaking of the most ancient skulls yet discovered, says: "They surpass in size the average of modern European skulls, while the symmetrical form compares favorably with the skulls of many of the most civilized nations of modern times."

Prof. Pierre Paul Broca says of the celebrated Cro-Magnon skull, which belongs to the earliest stone age: "The great volume of the brain, the development of the frontal region, the fine elliptical profile of the anterior portion of the skull, and the orthognathous form of the upper facial region are incontestable evidence of superiority and are characteristics that usually are found only in civilized nations."

Professor Dana, in his manual of geology, says: "Science has no explanation of the origin of life. The living organism, instead of being a product of physical forces, controls these forces for its higher forms, functions and purposes. Its introduction was the grandest event in the world's early history."

Professor Beale says: "There is a gulf between life and non-life that is unfathomable, and I can not believe it will ever be bridged."

Professor Tyndall says: "If asked whether science has solved, or is likely to solve, the problem of the universe in our day, I must shake my head in doubt. Behind and above and around us the real mystery of the universe lies unsolved, and, as far as we are concerned, is incapable of solution. I share Virchow's opinion that the theory of evolution, in its complete form, involves the assumption that at some period or other of the earth's history there occurred what would now be called spontaneous generation; but I agree with him that the proofs of it are wanting. I hold also with

Virchow that the failures have been so lamentable that the doctrine is utterly discredited.''

It will be remembered that Tyndall had made nearly a thousand experiments, using organic infusions, to determine whether or not spontaneous generation would take place, and they failed to prove the doctrine. The evolutionist *must* accept this doctrine which is entirely destitute of facts to support it.

In 1903, Lord Kelvin said in an address: ''Forty years ago I asked Liebig, walking somewhere in the country, if he believed that the grass and flowers which we saw around us grew by mere chance force. He answered: 'No: no more than I can believe that a book of botany describing them could grow by mere chemical force.' . . . 'It is not in dead matter that men live, move and have their being, but in a creative and directive power which science compels us to accept as an article of faith. Is there anything so absurd as to believe that a number of atoms, by falling together of their own accord, could make a crystal, a microbe, or a living animal?' ''

Professor Agassiz, in his essay on classification, says: ''Until it can be proven that matter can think and feel and choose, I take the existence of thought, not our own, in nature, as proof of the existence in nature of a personal thinker not ourselves.''

George J. Romanes, on whose shoulders, according to some, ''fell the mantle of Darwin,'' and who at one time was a chief supporter of Haeckel, wrote one of the strongest books against supernaturalism, but later he changed his views entirely and died in 1894 confessing his faith, not only in the providence of God, but also the deity of Christ. He returned to the church before his death.

Huxley made the following statement in his "Life and Letters" in 1903: "Science seems to me to teach in the highest and strongest manner the great truth that is embodied in the Christian conception of an entire surrender to the will of God."

Pasteur, one of the greatest scientists of all generations, who saved to the world annually millions of dollars by investigating various germ diseases and providing cultures for preventing the same, was a most devout believer. He wrote: "Posterity will one day laugh at the foolishness of modern materialistic philosophies. The more I study nature, the more I stand amazed at the works of the Creator."

Professor Townsend, of the University of Boston, said: "Except for a mind endowed with a conscience at the beginning, and with which organic evolution has nothing to do, and had not religion, especially the Jewish and Christian with their inspiring and uplifting power come to the aid of the human race, mankind would long since have disappeared from the face of the earth."

As previously indicated, Dr. Goette has stated the four stages through which Darwinism has passed in Germany, the second of which was "the period it flourished and found general acceptance." It seems that America is largely in this period now, and it is to be hoped that it is entering on the third period, which is "the period of transition and of sober second thought, when its principles and teachings are being called into question." It is evident that a large number who eagerly accept it do so because they imagine that it places them in the forefront of scientific progress, and not because they have any real knowledge of the subject. The multitude are being led like sheep

by dogmatists, who in turn have received the theory from other dogmatists, and they imagine that growth in numbers of ignorant supporters adds evidence to the truth of the theory.

The time has come when men simply assume the truth of the theory of evolution. In a recent work (1917) by H. F. Osborn, "The Origin and Evolution of Life," the author says: "In this review we need not devote any time or space to any fresh arguments for the truth of evolution. The demonstration of evolution as a universal law of living nature is the greatest intellectual achievement of the nineteenth century. . . . Evolution has outgrown the rank of a theory."

And yet in the face of these statements the author devotes the first half of his book trying to prove that the "origin and evolution of life" have taken place by spontaneous generation, and he fully realizes that this *must* be proved because it is a necessary step in the process of evolution, and this *must* be done before it can become anything but a theory.

But the author admits that when trying to establish this doctrine on a basis of facts he is only in the region of speculation. He says: "All *speculation* of the origin of life, *fruitless* as it may at first appear, has the advantage that it compels a sudden reversal of the naturalists' point of view, for we are forced to work from energy up into form, because, at the beginning, form is nothing; energy, everything." (Italics mine.) Again, he says: "The more modern scientific opinion is that life arose from a recombination of forces pre-existing in the cosmos." That sounds very much like materialism. He expresses his own views as follows: "We may express our own opinion, based upon

the application of uniformitarian evolutionary principles, that when life appeared on the earth some *energies* pre-existing in the cosmos were brought into relation with the chemical elements already existing." He does not, however, claim to be a materialist, for he says that the impression that the cosmos makes upon us is "that of limitless and ordered energy." He does not, however, at any time recognize God as the controlling power. He says: "The traditional opinion is that something new entered this, and possibly other planets, with the appearance of life; this view is also involved in all the older and newer hypotheses which group around the idea of *vitalism,* or the existence of specific, distinctive and adaptive energies in living matter—energies which do not occur in lifeless matter."

This theistic view the author does not accept. Instead of this, however, he searches among the known forces of nature in vain for the origin of life, and assumes that forces exist in nature that can produce spontaneous generation. In speaking of the evolution of the living world, he says: "Such evolution, we repeat with emphasis, is not like that of the chemical elements or of the stars; the evolutionary process now takes an entirely new and different direction. Although it may arise through combinations of pre-existing energies, it is essentially constructive, and apparently, though not actually, creative; it is continually giving birth to an infinite variety of new forms and functions which never appeared in the universe before." The author here accepts the evident fact that, if evolution took place, it changed its course as it advanced from the inorganic to the organic world—that it became constructive instead of destructive, and seemed to be

"creative." He attributes to the forces of nature the upward steps which the Christian attributes to God.

This book by Osborn contains many important facts, but it utterly fails, as all others have failed, to give us any light as to the origin of living things on the earth. It simply, as is the custom now, assumes that spontaneous generation and evolution are facts of science, and deals with them accordingly. It is a book that will be misunderstood by most people and will prove harmful to many.

"Prehistoric Man and His Story," by G. F. Scott Elliott, has recently (1915) been published. The author, as is common with writers of this type, assumes evolution as a fact. The frontispiece is an *imaginary* reconstructed picture of *Pithecanthropus erectus* by Professor Rutot, of Brussels. Professor Rutot has not confined himself to the reconstruction of *Pithecanthropus,* but he has used his artistic talent in reconstructing from various ancient skulls imaginary beings who, when living, possessed these skulls. These pictures are printed in various books as if they were true, and widely circulated, resulting in the misinformation of the public. There is no way by which the public can be more easily misled than by means of such pictures. I do not see any reason why Professor Rutot should not extend his imagination to the construction of a complete group of pictures joining monkey and man. I feel that if he will do so the group will be very popular. This will only be in harmony with Professor Gesell's advice to launch out boldly in the use of the imagination in these matters. Professor Elliott has no difficulty in assuming, without proving, that man has been here hundreds of thousands of years. This

assumption is absolutely necessary in the interest of the theory, and so it is easily made. It is evident that if man has been evolved from a lower animal, the time required was immense. It is a fact, here as elsewhere, that all along the line of evolution the infinite number of gaps that must be filled, in order to account for living things, are freely filled by the imagination. If I were to call evolution a science at all, it would be the *science* of the *imagination*. It is a theory that leads people to imagine that they know things that they know not, and never can know. Books of this class are insidious in their influence. They are the more readily misleading because they claim to be scientific, and every young person of ability, especially, wants to conform to science.

The religious public looks on with indifference while their children are being taught this doctrine, not knowing that it is a theory that undermines the Bible and all revealed religion. There is a great desire in many places to have a portion of the Bible read daily in our public schools. It has been excluded from the schools largely because religious people have not agreed with regard to it. If these people can not agree in this, why should they agree to the teaching of the theory of evolution, which annihilates the Bible as the book of authority in the Christian religion? I am aware of the answer that is given to the above; viz., the scientific world has accepted the doctrine of evolution; its truth is no longer an open question, and so we accept it and conform our teaching to it. The scientific world, in this case, is composed, for the most part, of people who have little knowledge of the facts bearing on the theory, and have received it from dogmatic teachers. The

great majority of capable men involved in this, as shown by statistics, accept the theory on the basis of naturalism and are unbelievers, and, of course, do not accept miracles. The man who conforms to this theory will find that, for the most part, he is following the teaching of confirmed infidels. They do not accept Christ as set forth in the New Testament. Again I ask, Why should a theory that necessarily destroys the Bible as the book of authority in religion be taught in our public schools?

There are more than enough sciences based upon most important practical facts which can furnish all material for a real scientific training in the laboratory, that is needed. Chemistry, physics, physiology, hygiene, and various other branches of science that are commonly taught, when taught in the right way, furnish the average pupil abundant training in science, and more than he can generally take. Why should intelligent pupils be compelled to pursue that will-o'-the-wisp, evolution, as if it were real science?

V

NATURAL SELECTION

I WILL now refer briefly to natural selection, because it is the chief thing relied on in support of the doctrine of evolution. It is well known that the rate of increase of any living thing is in a geometrical ratio. If all the seeds of a single maple-tree and its progeny could grow and produce trees, it would be but a few years till the world would be crowded with maple-trees. If all the roe of a single codfish were to hatch and live to maturity, the oceans would soon be crowded with codfish. But they do not.

It is evident, therefore, that nature has some means of limiting the number of organisms that arrive at maturity. As to whether a plant or an animal shall survive or not depends upon its inherent forces, food, protection from enemies, climate and freedom from accidents. An adequate supply of food is, perhaps, the principal one of these factors.

The number of seeds produced by plants in a forest forbids that each seed produce a plant that can grow to maturity. A great multitude of them may sprout, but will die for lack of food and sunshine. Their older competitors, with roots deep in the earth, destroy the seedlings.

The animal kingdom is limited by the quantity of vegetable food. All animals are ultimately dependent

on the vegetable world. The flesh-eaters live on the vegetable feeders. All living things in a state of nature are held in check by the limited supply of food. If herbivorous animals fail, carnivorous animals starve; if vegetable food fails, all animals perish for lack of food.

With plenty of food where no enemies exist, a species will multiply beyond bounds. The English hare in New Zealand and Australia, with no carnivorous enemies to prey upon them, multiplied so rapidly that in some regions they ate the grass to such an extent as to render sheep-raising unprofitable, and by their excessive numbers would finally limit their own species to the available supply of food. The number of animals in most regions has been limited by the struggle between the carnivorous and the herbivorous animals. There is ceaseless struggle for existence among all living things in the world, and generally but a small per cent. of organisms born arrive at the age of maturity. The means which nature uses to limit the number of organisms Mr. Darwin has called "natural selection," and Herbert Spencer calls "survival of the fittest." Mr. Darwin says that the offspring is never exactly like the parent, and that some of the offspring will be born with variations that are favorable to their existence, and so they survive and the less favored perish. He says: "Natural selection acts solely through the preservation of variations in some way advantageous, and consequently endure." Again he says: "We see nothing of these slow changes in process, until the hand of time has marked the lapse of ages, and then so imperfect is our view in long past geological ages, that we

see only that the forms of life are now different from what they formerly were."

Why do the few live and the great majority perish? If we consider a little in detail a few cases, we may better understand the process among plants. A thistle, for example, may produce a thousand seeds which are equally perfect. The wind may scatter most of these far and wide. One hundred take root and grow, and nine hundred perish in various ways. The birds may destroy some; others may fall on stony ground; others are carried to places where, on account of other growths, thistles can not thrive; and they are disposed of in many ways by the winds. The seeds that did not grow were just as perfect and as well adapted to grow as those that found favorable soil and reproduced. The thistles that grew produced another crop of seeds which were scattered in all directions by the changing winds, and a small per cent. grew and reproduced more seeds with down.

The fact that some grew, and others, equally perfect, did not, was due solely to fortuitous circumstances —to accident, as we commonly express it. Those that lived were no better adapted to reproduce than were those that perished. The plants that grew from the few thistle seeds were not all equally fortunate in their growth. Those that had the best soil and the fewest competitors grew largest and produced more seeds, and the winds scattered the seed again.

If we try to apply "survival of the fittest" to these thistles, we ask, In what did the fittest consist? We can only make the empty answer that they survived because circumstances were more favorable to them than to those that perished.

If we consider the hundred thousand perfect seeds that fall from a maple-tree in a single season, perhaps not a hundred may grow to be trees. The winds scatter these seeds more or less, and we can imagine that a less perfect seed might lodge in a fruitful soil and become a tree, while the better seeds failed. In this case, nature, by supposition, selected the poorer specimen, which no doubt sometimes happens. It was not a case of "survival of the fittest." The fitness was not in the seed itself, but in the external conditions. Fittest is not at all applicable to this and similar cases. Nor is natural selection to be applied here, for that assumes a special fitness in the organism itself, adapting it the better to external conditions. And so with plants in general. Of course the maples in a state of nature are in competition with the other species of the forest, and with the animal world. In the native forest, little would depend on the relative value of the seeds of the tree, for it is evident that the differences would be inappreciable; but a large amount would depend on soil, sunshine and moisture available for growth. The favorable differences in certain seeds, if there were any, would be negligible, but such inherent differences must exist, otherwise natural selection would have nothing on which to act. As to how the innumerable species of plants could have originated from some simple original beginning, is beyond all imagination. The known permanence of the many existing species with practically no change, and the sudden appearance in the cretaceous of the angiosperms, the highest group of plants, without any known precursors, lend force to the idea that plants have not been evolved. If they have been evolved in such vast numbers of species, the forces of

evolution in them have been active far beyond anything that is now known of plants. Chamberlin and Salisbury say: "The eastern and central America angiosperms, including both monocotyledons and dicotyledons, appeared early in the period, and developed so rapidly that by the beginning of the next period they seem to have overrun the continent. This is one of the most radical evolutions in the history of the plant kingdom. . . . The earliest forms are ancestral, but not really primitive, and throw little light on the derivation of the group. The majority bear definite resemblances to modern genera and some are referred to living genera. Before the end of the period, figs, magnolias, tuliptrees, laurels, cinnamon and other forms referred to modern genera, but not to modern species."

It will be noticed that natural selection depends on a change in the organism itself, and that it takes place with extreme slowness. Now, it is evident that this slow process of imaginary changes is the method by which all living and extinct organisms, according to Darwin's teaching, have been produced by evolution from some simple primordial cell or cells. He does not claim that it is the sole cause, but the principal cause, of evolution. Darwin's son, in writing his biography, says: "We can not prove that a single species has changed." And yet the evolutionist claims that all species have been formed by changes of other species. In applying his theory of evolution to the eyes of the vertebrates, Darwin said: "The eye, to this day, gives me a cold shudder."

Professor Coulter says, with regard to natural selection, that "the slight variations used by the theory of natural selection can not be extended by continuous

selection beyond the boundary of the species. . . . The selection among such slight variations is one that can have no decided advantages."

Professor Romanes says "that a large proportional number of specific, as well as of higher taxonomic, characters could not be thus preserved."

Nearly all of evolution belongs to the geological record. Man's experiments with plants and animals are confined mostly to those that have been domesticated. It is soon evident that man's selections of variations, resulting in certain further changes of plants and animals, give entirely different results from those in a state of nature.

Mr. Darwin spent much time in studying domestic pigeons, of which there are many varieties. By cross-breeding varieties which are widely different in appearance, he concluded they had all been derived from a species of rock-pigeons. He claimed that the varieties of domestic pigeons are as widely different from each other as are many recognized species of birds—that, in fact, they were incipient species. This is the difficulty with respect to regarding them as species. When closely related species cross at all, as they sometimes do, their offspring are not fertile—they can not reproduce their kind. Among domestic animals the mule is an example. Darwin says: "Now, it is difficult, perhaps impossible, to bring forward one case of the hybrid offspring of two animals clearly distinct, being perfectly fertile." This ought not to be, since the varieties from which closely related species were formed were more fertile when crossed than before. Why should the species that were formed from varieties that were perfectly fertile when crossed, cease to be cross-

fertile? In other words, how can varieties that are perfectly cross-fertile become species that are cross-sterile with the parent form and with each other in the form of new species? Mr. Romanes cut the Gordian knot here by assuming that the cross-sterility between the new form and the parent was due to birth, and for this some have given him much credit. But I do not know of a more unwarranted assumption than this in the whole range of evolution. The difficulty is fundamental and has not been solved.

The fact with regard to the domestic pigeons is that all the varieties cross and produce fertile offspring. Crossing even renders them more fertile than they would otherwise be. It is admitted that if the different varieties were permitted to mingle freely, a common form of pigeons would be the result. The varieties have not been produced by natural selection, but by man's selection. Man has for generations of the life of the pigeon separated and kept separate the birds that possessed certain peculiarities that he desired them to possess, and has thus increased the structures that he sought. Nature has no way to separate birds that possess some peculiarity of structure. Any variation is lost by the free mingling that occurs in a state of nature. The wild pigeon of the United States, that a few years ago abounded and migrated in flocks of many thousands, was quite uniform in its structure. There was no tendency among these widely scattered birds to form species.

The various breeds of domestic chickens freely mingle when permitted to do so, and produce fertile offspring. The differences have been brought about by man's selection. We never fail to recognize

them as chickens, whatever the breed. And so man's aid in selecting and separating has helped to form varieties of all our domestic animals. But Nature has nothing that she can substitute for man's work, for she has no means of separating variations; they are inevitably lost by mingling with the common forms.

As to artificial and natural selection, Spencer says: "They are analogous only within certain narrow limits, and in the great majority of cases natural selection is utterly incapable of doing that which artificial selection does."

It is evident that if a species forms a variety that becomes a new species, certain things must occur during the process: First, that a favorable variation should occur in nature; second, that the individuals possessing the variation should be separated from the other individuals of the species to prevent merging by mingling with forms that do not possess the variation; third, that a number of individuals possessing the variation should get together in order that the variation might be propagated; fourth, be cross-sterile with the parent forms, but be fertile with each other. I need not remark that these difficulties have not been overcome, by means of very slight changes through many generations. If Romanes' claim that cross-sterility between parent and offspring is due to birth, then it is evident that on account of the great number of slight useful changes, cross-sterility must happen at almost every step all the way along the line in order that the variations may survive. But we know that this is not true—we do not know that it takes place at all. Hence this assumption is worthless.

Darwin says that cross-sterility "could not have been effected through natural selection, for it could have been of no direct advantage to an individual animal to breed badly with another individual of different variety and thus leave few offspring; consequently such individuals could not have been preserved or selected." Here, then, natural selection fails to account for facts that exist, and no adequate explanation has been given to dispose of the difficulty. Yet this must be explained, if evolution has taken place.

Spencer wrote several articles on "The Inadequacy of Natural Selection." Recognizing the failure of natural selection to fully account for evolution, he supplements it by the use of "acquired characters." He says: "Either there has been inheritance of acquired characters or there has been no evolution." He was one of the ablest men who wrote upon the subject, and he decided that inheritance of acquired characters was the decisive thing involved. He says that "the neo-Darwinians, however, do not admit this cause at all." He also says: "See, then, how the cause stands. Natural selection, or survival of the fittest, is almost exclusively operative throughout the vegetable world, and throughout the lower animal world, characterized by relative passivity. But with ascent to higher types of animals, its effects are in increasing degrees involved with those produced by inheritance of acquired characters, until, in animals of complex structures, inheritance of acquired characters becomes an important, if not the chief, cause of evolution."

In the above, Spencer expresses the idea that natural selection is the dominant factor in evolution among

plants and the lower forms of animal life. Plants are passive, and many of the lower forms of animals are fixed and almost passive. I have called attention to the fact that if changes took place among them it would be due to external conditions and not to natural selection, for the reason that the small differences in the seeds would furnish no adequate ground for natural selection. The same would be true among the fixed forms among animals. If natural selection has not been the principal factor among the higher animals, and Spencer claims that it has not, then there is little room for it anywhere in evolution.

As acknowledged by practically all evolutionists, natural selection will not account for the whole process of evolution, and it must be supplemented in various ways; as by correlation of growth, sexual selection, etc., all of which, in my opinion, are very defective. Many people accept evolution as a fact, but fail to indicate any method by which it has taken place. It is left as a theory floating in the air.

Professor Coulter, writing against natural selection, says: "It is generally believed that acquired characters are not inherited." The changes of parts by gain or loss which the organism undergoes during its life are called acquired characters. Circumcision is an acquired character which the Jews have practiced for many generations, and yet they do not inherit it. The adult Hindoos acquire an antipathy to the use of meat, but their offspring do not inherit any such antipathy. Ears and noses of certain savages have been perforated for long periods, and yet the children are not born with these parts perforated. The evidence in favor of the inheritance of acquired characters is practically noth-

ing. This being true, Herbert Spencer would not be classed as an evolutionist.

Prof. E. D. Cope said in "The Primary Factors of Organic Evolution": "My aim will be to show, in the first place, that variations of character are the effect of physical causes; and, second, that such variations are inherited." This entirely ignores natural selection, which is based on inherited characters, and bases it all on acquired characters, which are for the most part mechanical. There is no agreement as to the method of evolution among those who accept it as a fact. Even if the inheritance of acquired characters were true, it would not prevent merging, which would eliminate variations.

VI

PALEONTOLOGY

THE subject of paleontology I have considered at considerable length in "Organic Evolution Considered." I take up the subject in a more limited way here, because I feel that some mention of it is necessary in this place. The length of the geological record since life began on the earth has been many millions of years. The deposit in water of more than a hundred thousand feet of stratified rocks, in natural ways, many of them containing fossils, since life began upon the earth, required a length of time that we can not estimate.

It is claimed by evolutionists that the first living things were the simplest kinds of organisms, which were evolved by the action of resident cosmic forces upon certain forms of matter. One of the latest writers on the origin of living things, H. F. Osborn, writing from the "energy conception" of evolution, says "that when life appeared on the earth, some energies pre-existing in the cosmos were brought into relation with the chemical elements already existing." This writer thinks that bacteria, all of which are microscopic in size, and some beyond the range of the microscope, were the first organisms on the earth. None of the bacteria have the structure of true cells; they are more simple in their structure. According to this, bacteria were the seeds

from which all organic beings, including man, subsequently sprang.

The general process of evolution under the form of a tree can readily be imagined. Most of the millions of species that compose this imaginary tree are dead and buried in the geological record, and their remains have not been discovered. If we construct the tree of life in its complete form, as the theory of evolution demands, and begin with any species of animals or plants, living or extinct, we would be able to trace it back to bacteria as the first living ancestor. Most of the tree, if it existed, is buried in the geological formations, while the living forms would be represented by the tips of the twigs above the surface. If, now, we erase the parts of this tree which of necessity existed and furnished evolution its physical continuity, we are obliged, in the first place, to erase the lower half or more of the tree of life as being absolutely unknown. It is not represented by any known fossils. Chamberlin and Salisbury, in speaking of the oldest known fossils, say: "It is significant that the oldest definite fossils yet found are forms well up in the animal kingdom, and that they occur (in Montana) nine thousand feet below the unconformity between the Proterozoic and the Cambrian." Also: "The best preserved forms are those of the Euripterus-like crustaceans." Le Conte says: "At the end of the archæan times—when the archæan volume closed—we find only the lowest protozoon life. But with the opening of the next era, apparently with the first pages of the next volume, we find already the great types of structure except the vertebrata. And these not the lowest of each, as might have been expected, but already trilobites among the Articu-

lata and cephalopods among mollusks—*animals which can hardly be regarded as lower than the middle of the animal scale.*" Here, then, in the Primordial period, which is close to the bottom of fossil-bearing rocks, we find animals that are half-way up between bacteria and man. This fact would indicate that previous to the "Euripterus-like" forms of the Proterozoic period, "which are well up in the animal kingdom," as much time had elapsed during which animals were being evolved which gave rise to the trilobites and cephalopods of the Primordial period as has elapsed since that period. During the long ages preceding the highly organized animals of the Proterozoic period, and during which animals of many forms were necessarily being evolved, if evolution was taking place, no fossils showing their existence have been found. I repeat that in erasing the parts of the tree of life that we have no remains of, we must rub out the whole lower half, covering many millions of years. And yet it is admitted that rocks existed during this long period that might well contain fossil remains of mollusks, trilobites and other forms, if they existed. The first half of the geological record must be *assumed* to have existed, and that the fossils have been entirely destroyed. To reach the point in evolution where paleontology can have a solid footing in organic remains, two enormous assumptions have been made: First, that by the process of evolution spontaneous generation has taken place; second, that animals and plants of many kinds existed during the first half of organic evolution, but that their remains have all been destroyed. There are no facts to justify either of these assumptions; and yet it is claimed that evolution has passed beyond the stage of

theory, and is to be accepted as an established fact of science.

The fossils of the Primordial period represent all the sub-kingdoms of animals except the vertebrates. If we strike from the upper half of the tree of life the forms that are not represented by known fossils, we erase nearly all of it, so that only scattered spots that do not even remind one of organic connection remain; they do not suggest the possibility of a tree of life which would include all species of plants and animals. The so-called tree of life is an invention of the imagination.

There has been little progress among the invertebrates throughout the geological record, and yet the animals of the Primordial must have made rapid progress in evolution during the first half of time in order to reach their condition in the Primordial. The orthoceras of this period, it has been claimed, belonged, perhaps, to the highest class of invertebrates. The rapid progress which it made prior to the Primordial and the little progress, if any, in structure which the class to which it belonged has made through all geological time are not consistent with each other. The same is true of the spiders and scorpions of the Paleozoic. They have existed through all the geological ages since their early introduction, without making perceptible progress, yet they must have progressed rapidly through the preceding ages to obtain their highly organized complex structures. High up among the articulates were numerous genera and species of trilobites with compound eyes. They were numerous in the Primordial and continued on through the Paleozoic, which includes most of the known geological record, without making per-

ceptible progress. It is remarkable that animals which made such wonderful strides of progress during the first half of the time required for evolution should, as soon as they appeared, cease to progress during the many millions of years of the known record. Among the mollusks, some of the living lingula are closely like forms in the Primordial. The same is true of living forms of the lamellibranchs. The spiders and scorpions of the Silurian look closely like existing forms. The oldest known insects of the Paleozoic were highly organized, and insects may have culminated in size, if not in the number of species in the Carboniferous.

Looking at the geological record as we know it, one is impressed with the fact that the oldest known forms of the invertebrates were high up in the scale of the classes that they represent, and that during all the geological ages of their existence they made little, if any, progress in structure. Considering the remains of all the fossil invertebrates known, with everywhere the absence of innumerable missing links which outnumber by a thousand-fold the known forms, we can discover no reason for the theory of evolution, nor for constructing an imaginary tree of life to represent the process among the several sub-kingdoms of the invertebrates.

Dawson says that he examined more than two hundred species of Post-pliocene mollusks, and that they are identical with living species—that even the varieties are the same now that they were then.

"Pictet catalogues ninety-eight species of mammals which inhabited Europe in the Post-glacial period. Of these, fifty-seven still exist unchanged, and the remainder have disappeared. Not one of them can be

shown to have been modified into a new form, though some of them have been obliged, by changes of temperature and other conditions, to remove into distant and now widely separated regions. Further, it would seem that all the existing European mammals extended back in geological time at least so far as man, so that since the Post-glacial period no new species have been introduced in any way."

Gray, in speaking of De Candolle's conclusion as to the length of time that living species of oaks have existed, says: "He accepts, and, by various considerations drawn from the geographical distribution of European Cupulifera, fortifies the conclusion—long ago arrived at by Edward Forbes—that the present species, and even some of their varieties, date back to about the close of the Tertiary epoch, since which time they have been subject to great and frequent changes of habitation, but without appreciable change of specific form or character; that is, without profounder changes than those within which a species of the present time is known to vary."

Considering the above examples of animals and plants, we would conclude that species are long-lived and unchangeable. There is no evidence among these that in a state of nature one species is changed into another.

Romanes says of the geological record: "With so fragmentary a record as this to study, I do not think it too much to say that no conclusions can fairly be based upon it, merely from the absence of testimony. If we speak of it as a history of life upon the planet, we must allow, on the one hand, that it is a history which merits the name of 'a chapter of accidents'; and,

on the other hand, that during the whole course of its compilation pages were being destroyed as fast as others were being formed, while even of those that remain it is only a word, a line, or, at most, a short paragraph here and there, that we are permitted to see.'' It is certain that the geological record is the one and only book that contains a history of creation. Romanes says, however, that it is so fragmentary that it must be looked upon as ''a chapter of accidents.'' He assumes that the immense majority of fossils, composed of the most durable materials—namely, carbonate and phosphate of calcium, the carbonate shells and corals composing a large part of the limestone in existence—have been lost. An incredible number of shells and corals, sometimes silicified, have been preserved in perfect condition in the limestones, but the connecting forms, which, if they existed, vastly outnumbered the known forms and were of similar materials, are not found. It is evident that the conditions for preserving connecting forms were as favorable as for preserving known forms. The only conclusion that we draw from this is that the so-called ''missing links'' never existed.

Le Conte, in speaking of this condition, says: ''We think the fragmentariness of the geological record has been overstated. While it is true that there are many and wide gaps in the record; while it is true, also, that even where the record is continuous, many forms may not have been preserved, yet there are some cases, especially in the Tertiary fresh-water deposits, where the record is not only continuous for hundreds of feet in thickness, but the abundance of life was very great, and the conditions necessary for preservation exceptionally good. In such cases the number of fossil species

found in each horizon seems to be as great as in existing faunas over equal space. The record in these cases seems to be continuous and without break, and crowded with fossil forms; and yet, although the species change greatly, and perhaps many times, in passing from the lowest to the highest strata, we do not usually, it must be acknowledged, find the gradual transitions we would naturally expect, if the change were effected by gradual transitions. The incompleteness of the record, therefore, although a true and important cause, is not the whole cause." He also says that the absence of connecting forms is "the greatest of all objections" to the theory of evolution. He says also: "As in the case of *continuous* geographical faunas, the change is apparently by *substitution* of one species *for* another, and not by transmutation of one species *into* another. So also in *successive* geological faunas the change seems rather by substitution than by transformation."

Darwin says that "the number both of specimens and of species, preserved in our museums, is absolutely as nothing compared with the number of generations which must have passed away even during a single formation." This might be true with animals that were deficient in hard parts that could be fossilized, but not true of mollusks having shells of the usual kind. But the latter are remarkably deficient, and Darwin expresses himself as follows with regard to the absence of transitional forms: "But I do not pretend that I should ever have suspected how poor was the record in the best preserved geological sections, had not the absence of innumerable transitional links between the species which lived at the commencement and close of each formation pressed so hardly on my theory."

And yet Mr. Darwin assumes that most organic forms left no fossil remains, and that the great number absent would be in favor of his theory if they were found. There is no reason why intermediate forms of fossil shells and corals would not have been preserved.

He and Romanes, and others who hold with them, are obliged to blot out nearly all of the second half of the tree of life as being unknown. With the first half of this tree entirely unknown, and nearly all of the second half gone, we are left with isolated spots that in no way remind one of a tree. This harmonizes well with the following statement by Dr. Ethridge, of the British Museum: "In all this great museum there is not a particle of evidence of transmutation of species. Nine-tenths of the talk of evolutionists is sheer nonsense, not founded on observation and wholly unsupported by fact. This museum is full of proof of the utter falsity of their views."

Another method by which the evolutionary process has been widely represented, especially so far as the production of man is concerned, is by means of a line sloping up from a cell at the lower end and man as the outcome of the process at the other. According to Osborn's idea, the line would begin with a bacterium, which is lower in the scale of life than the cell, and end in man at the other end. The unbroken line joining the two represents the unbroken physical continuity that must have existed.

I will next consider the imaginary line by which it is claimed man has been evolved from bacterium to man. The evolutionist asks only one speck of living protoplasm, one *bacterium*, in order that he may show by *scientific* process how man has been evolved. In the

first place, he is obliged to admit that he can not explain by science this living speck. But, starting with it, the next step would be to convert it into a plant of one cell, a protophyte, and this into a protozoon, an animal of one cell. This, of course, he has not been able to do.

All animals of one cell are Protozoa, and those of more than one cell are Metazoa. The Protozoa are generally microscopic in size. A cell has an outer covering, a cell-wall, which is filled with protoplasm in which is a nucleus. Reproduction takes place by the division of the nucleus into two parts, and by the constriction of the cell-wall so as to form two cells, each with a nucleus. Reproduction is never sexual. Metazoa "all propagate themselves by means of sexual congress," and this method must at times take place, although some of the lowest forms may, at times, to a limited extent, propagate in other ways. Sexual reproduction is brought about by the fusion of a male and female cell. The cell of the female, the ovum, is fertilized by the spermatozoon of the male, which is many times smaller than the ovum. Fertilization is "effected by the fusion of the male and female pronuclei into a single (or new) nucleus; this latter body proceeds to exhibit the complicated process of karyokinesis, which, as before shown, are preliminary to nuclear division in the case of egg-cells. The processes going on within the nucleus are so enormously complex and, withal, so beautifully ordered, that, to my mind, they constitute the most wonderful—if not also the most suggestive—which have ever been revealed by microscopical research. It is needless to say that I refer to the phenomena of karyokinesis."

From what I have written, it is evident that there is a great gap between the Protozoa, all of which are one-celled animals, and the Metazoa, which are composed of many cells. All the higher types of the Metazoa are composed of many kinds of cells, which make up the various kinds of organs and enable them to perform their various complicated functions. It was necessary that the first Metazoon be evolved from a Protozoon—that an animal without sex should be converted into one or more animals with sex. In doing this, we are obliged to jump from the simple method of reproduction by division to one of the most complicated processes in nature—sexual reproduction. This difficulty has not been bridged, nor do I think it can be. Of course, it can easily be bridged in the usual way, by an assumption.

It is commonly assumed that the immediate ancestor of the vertebrate was a worm, of which *balanoglossus* is an example. The road of evolution of this worm is entirely unknown, but evolutionists are certain that it persisted in its upward course till it became an amphioxus-like vertebrate with a notochord which represents a backbone. Amphioxus, by further evolution, became a fish, with all the organs that fishes now have. It is evident that if the ancestors of balanoglossus were evolved and the latter became amphioxus, and both forms have existed until now, that their lack of capacity for progress shows that they were poorly prepared to become the ancestors of man.

Fishes.—Perfect fishes of various kinds were found throughout the Silurian, and they abounded in the Devonian, which has been called the age of fishes. The rocks are blank as to their origin. It is easy to assume

that they were evolved, and this is done in the name of science. The imagination alone can account for the origin and preservation of fins through their long-useless stages. But the *science* (?) of the evolutionist says that they were evolved.

Amphibians and Reptiles.—We pass upward to the amphibian and the reptile, which had legs and toes which must have been evolved from fins, and so we must accept this evolution as "established" science (?).

Birds.—The next step upward is, along one branch, to birds, which it is claimed were evolved from reptiles. The oldest known bird is the Archæopteryx of the Solenhofen limestone. This warm-blooded bird was evolved from a cold-blooded reptile, and the scales of the reptile were converted into the feathers of the bird. As to how this happened we are left to imagine. It is evident, however, that, if the Archæopteryx was evolved, then, prior to the known fossil specimen of the Jurassic, it must have had a long line of ancestors, extending far back into the Paleozoic age; none of which ancestors have been found.

Mammals.—From another line of reptiles it is claimed that the mammals were evolved. They are warm-blooded, and have non-nucleated red blood corpuscles, while the reptile is cold-blooded, and has nucleated red corpuscles. Mammals are generally covered with hair, and all mammals have some hair on their bodies. As to how the necessary changes could have taken place in evolving mammal from reptile, from cold to warm blood, from nucleated to non-nucleated red corpuscles, and from scales to hairs, we are again left to imagine. This evolution also demands the evolution of milk glands, and the instincts in both the parent

and offspring to use these glands for the nourishment of the young, from a reptile that had no glands of this kind. It would be necessary that this great change be made in a single generation, so that it would be useful to the new species; otherwise, it would perish. The remains of the oldest mammals known have been found in the Triassic and were probably insectivorous in their habits. These mammals were of the size of mice and rats. We are totally at a loss to imagine how one of these small marsupials, covered with hair and nourishing its young with milk, could have been suddenly evolved from a reptile. Besides, if these mammals of the Triassic were evolved, they must have appeared as intermediate forms far back in the Paleozoic, where none of their remains have been found. The Triassic, Jurassic and Cretaceous rocks, which constitute the Mesozoic, were, in the aggregate, probably from fifty to sixty thousand feet in thickness, bearing abundant fossils, and requiring millions of years for their deposit. During all of this time, down to the close of the Cretaceous, the remains of a few marsupials only have been found; true placental mammals not having yet appeared. Chamberlin and Salisbury remark: "The *mammals* thus far recovered from the Cretaceous indicate little advance upon those of the Jurassic. Mammals appear to have played a very inconspicuous part in the fauna of the period." The scarcity and smallness of the animals, and their total lack of progress during the millions of years, furnish the poorest imaginable beginning for the evolution of the great and numerous placental mammals of the next age.

The Tertiary, or the Age of Mammals.

Following the Cretaceous is the Tertiary, or the age of mammals. This is commonly divided into three periods—the Eocene, Miocene and Pliocene, in their order of succession.

Chamberlin and Salisbury say of the Eocene mammals: "The evolution of mammals was so rapid that before the close of the Eocene the Herbivora (Ungulata), Carnivora, Edentata, Insectivora, Rodentia, Quadrumina, Cetacea, Sirenia, and probably the Cheiroptera, were distinctly defined." Among the mammals were many of large size, such as the Titanotherium, Rhinoceros, Hippopotamus, Deinoceros, Tinoceras, Coryphodon, Tillotherium, Palaeosyops, Brontops, Giant Pigs, a Zeuglodon whale seventy feet long which abounded in the Gulf of Mexico and has left numerous remains on the Gulf coast, and many other kinds on the land and in the sea. The development of the great number of mammals during the Eocene is one of the most remarkable things in all geological history. Their origin has not, and can not, I believe, be explained by the theory of evolution. That their ancestors were the small marsupials of the Cretaceous, which had, up to the close of that period, made no progress in structure during millions of years that marsupials had existed, seems wholly impossible; and yet this must be assumed to have taken place unless we seek a different origin for the Eocene mammals. The only other origin that could be sought would be reptiles of an unknown kind.

The evolutionist is obliged to claim that the Eocene mammals were evolved from animals that existed in the Cretaceous, and here he cuts the usual Gordian knot

with his assumption, in the name of science. In the Miocene and Pliocene periods many additional mammals were introduced, and so on in the Quaternary, forms now extinct were present, as well as our modern species, and their remains are found mingled with those of early man.

Representatives of the lower primates, the lemuroids, from which apes are supposed to have descended, have been found in the Eocene. In the Miocene period true apes appeared in the Old World. "No remains of lemuroids or their descendants have been found in the Pliocene of North America." It is evident from this that man has not, if anywhere, been evolved on this continent. Remains of man more ancient than those of Indians have not been found here, nor is there any evidence that he had his origin from some lower animal in Europe.

Osborn speaks about "seven or eight" races having migrated into Europe, "chiefly from the great Eurasiatic continent of the East," during the glacial periods, of which he claims that there were four. The inhabitants of Europe arrived in Europe as men. A few remains of man that are quite ancient have been found in Europe. No one can, with any degree of accuracy, estimate their age in years. Yet there are anthropologists who do not hesitate to push man back into the ice age, and claim that he has been in Europe many thousands of years.

Osborn's recent book, "The Old Stone Age," takes for granted, of course, that evolution is true. To read the book one would suppose that little, if any, opposition has been offered to the extreme positions that have been assumed. As usual, the artist has been called in

to reconstruct from a single jaw-bone in one case the complete bust of the former owner of the lower jaw-bone, with a hog swung gracefully across his shoulders. I do not see why the same artist might not from this same jaw have greatly enlarged his work and constructed this man's wife and children, a few wolf-like dogs, a dead cave-bear lying in front of the cave, and many other surroundings, all of which would probably be as credible as the work he has done. This bust and hog beautifully wrought by the artist, Professor Rutot, of Berlin, from that jaw-bone is all that is necessary to convince the average reader that it represents what once existed as a fact. The imagination of the artist supplies the *facts* of science (?).

The "Piltdown man of Sussex, England," has been fortunate to have so good an artist as J. H. McGregor prepare in plaster his head and neck, of which three views are given in the book. The view of the bones does not seem to sustain the work of the artist. A different artist would, doubtless, construct a bust that did not closely resemble that by McGregor, especially if his ideas of early humanity were not so degraded as those that some anthropologists possess.

The geological record does not show that man was derived from an ape-like ancestor anywhere. The most ancient skulls of Europe described in Osborn's book are acknowledged to be human. The discovery of *Pithecanthropus erectus* by Dr. Dubois, in Java, in 1891, is the most important that anthropologists have yet made. I have spoken of this sufficiently in the chapter on "Evolution and the Public Schools." I will remark, however, that the profile views of *Pithecanthropus* and of spy I. are practically the same size in their outlines.

It is known that the latter is human, and the former, so far as the size of the brain is concerned, may also be human. The brain of *Pithecanthropus* is from 855 to 900 cubic centimeters, while that of the smallest human brain recorded in lower members of the human race is 930 cubic centimeters. It was noted at the time of the death of Gambetta, who was the political leader in the Republic of France, that his brain was unusually small. The unknown factor "quality" counts much in intelligence.

Again I say, let the leading anthropologists, and others who are specially skilled in that line, agree as to the standing of *Pithecanthropus* before individual investigators who are specially wedded to the theory of evolution triumphantly proclaim that it was the "missing link." Osborn himself seems to be in doubt as to the true position of these bones when he says: "There are, however, reasons for excluding *Pithecanthropus* from the direct ancestral line of the higher races of men." This statement blots out *Pithecanthropus* as a remote ancestor of the Caucasian race. This destroys the foundation of the hopes of the anthropologists. They must still go in search of the "missing link."

VII

LAW

I AM satisfied that the chief stronghold of evolution, in the opinion of many, is the idea of the universal reign of law. Law prevails everywhere, among all material things, and among the forces of nature, and in the realm of mind. All events are determined by fixed laws. Man has no power to change the laws of nature; they are founded in the nature of things. The universe is a mechanism—the world is a machine. Man is wholly in the grasp of laws from which he can not escape. Man is a machine with no free will. The law of cause and effect extends through all nature. Cause and effect constitute an endless chain, through all the ages. The objector says that determinism, fatalism, is the inevitable result. Law eliminates miracles and revelations, and evolution, of necessity, follows. It is the scientific method that follows the law of cause and effect.

The above illustrates the loose way in which people think and talk. It is a sample of mental incoherence.

Let us consider some of the things that are within our reach with the idea of law. They are; First, the different kinds of matter; second, the forces of nature; third, plant life; fourth, animal life; fifth, all psychological powers of all animals, from the general sensation alone which all animals have, up through the

special senses, through the many instincts, to the mind of man with its wonderful powers.

Before life appeared on the earth, the inorganic world alone existed. This dead world, so far as science can view it, was made up of the various kinds of matter and the forces of nature. I have called attention to these briefly in another chapter. The great science of chemistry, the most important of all the sciences, is founded upon the fact that laws of various kinds exist among the substances that compose the earth. The law of definite proportions in chemistry is a statement of the fact that when two or more elements unite to form a compound, the ratios between the weights of the elements that combine are always the same. For example, the relative weights of hydrogen and oxygen, that combine to form water, are invariable. That is, water has a definite, invariable composition. One correct analysis of pure water shows the composition of all water. The same law holds good with the hundreds of thousands of compounds that are formed from the elements. Carbon alone is known to enter into more than a hundred thousand compounds. This shows the immense power of carbon to combine in different proportions with other elements. Nearly all of the simple substances combine with others to form compounds, and some of them combine with most of the elements to form compounds. Fewer than one hundred elements are known, but their affinities cause them to unite in endless ways to form the immense number of substances that are found in the earth. Fewer than one hundred elements are known, and most of them exist in nature only in combination, so that most things that we see are compounds.

The fact that law reigns among the atoms of matter furnishes the basis of chemistry. This fact is of the utmost importance to man. A knowledge of these laws enables him to prepare a multitude of chemicals that are of the utmost importance in the various walks of life. Without the existence of these laws and without man's knowledge of them he would be helpless in the presence of the riches by which he is surrounded. As to why elements unite to form compounds we are ignorant. When a lighted taper is stuck to a mixture of two volumes of hydrogen and one of oxygen, the gases unite with an explosion, and water is the product of the union. We call the force that causes them to unite chemism, or chemical affinity; but this name, while convenient, only expresses our ignorance. The chemist rightly assumes that under like conditions he will obtain like results. This is only another way of saying that law prevails in the chemical world. He also knows that he must conform to the law to obtain the result. His knowledge of the law gives him a definite grasp of things, so that he can proceed with intelligent foresight to obtain desired results. Without a knowledge of the laws of chemistry man could have made but little progress in the world. These laws are beneficent. Man is not in their grasp; but they are under his guidance, and thus serve his purpose. The chemical force acts at insensible distances only.

The motions of the planets around the sun in definite orbits and at certain rates, and the motions of the satellites of the planets, furnish the foundation for astronomy. We say that these bodies move according to fixed laws. Gravitation, which acts at all distances, determines their motions. Their laws are

only their regular motions that are determined by gravitation.

Light, heat and electricity—each has its definite methods of action, some of which we have learned; and we speak of the laws of these forces. A knowledge of the many ways in which these forces act constitutes great branches of modern science. It is certain that they act according to definite methods, and it is this fact that enables man to use them with success. We are accustomed to say that these forces act according to law; which, as in other cases, means only that they act in certain definite ways. There is no terror to be assigned to the fact that the methods of their action are uniform.

Chemistry, physics and astronomy are all based on the fact that the forces involved all act in definite ways, or according to laws. These forces are so related to each other that each of them can be converted into all the others, which is a fact of the highest importance in the commercial world. They belong primarily to the inorganic world. They were here ages before life appeared.

We next consider the lowest part of the living world, the existence of which the dead world can not account for. Passing over bacteria, the lowest of living organisms, and over the one-celled plants, and up to the higher land-plants with which we are more familiar, we learn that certain kinds of food are necessary, and that the food is appropriated in certain definite ways. We know, also, that light and heat are necessary that the plant may do its work. We learn that plants manufacture a great number of compounds that do not exist in the dead world. Woody fiber, starch, sugar, oils and protoplasm are among the most important compounds that they manufacture; but there is also a vast number

(and many of them very complex) of compounds that are produced by plants. The chemist can not follow the methods that are used by the plants. Plants have a corner on methods that can not be infringed on. Even when man has made in the laboratory a few compounds of carbon which the living world produces, he has used methods entirely different from those of the organic world. Urea, a waste animal product, was the first that was produced artificially in the laboratory. The chemist has no hope of being able to produce living protoplasm, which has been spoken of as "the basis of life," and is the most important substance in plants and animals.

We can readily believe that the plant performs all of its functions according to laws; but they are not the laws of the inorganic world. While the forces that prevail in the inorganic world aid the plant in doing its work, they alone are not sufficient to do the whole work of the plant. The laws of plant growth have not been produced by the laws of the dead world below. When we think of the functions of the plant, we are obliged to think of more than dead matter and the inorganic forces of nature. It is evident that the word "law" has a different meaning here from what it has when referring to the inorganic world.

Looking at the animal kingdom, we learn that animals can not live on the inorganic world alone; they must have organic food, either from plants or from other animals, in order to grow and do their work. They can convert organic tissues, such as lean meat, starch, sugar and fats, into the tissues of their own bodies. The living body of the animal is more than the tissues which the plant furnishes as food, plus the inor-

ganic foods and forces of the dead world. The living animal forces reign supreme in the animal, and enable it to perform its functions. It organizes a large number of tissues and substances which form its body and enable it to perform its complex functions.

The laws of the animal are more than those of the dead world and of the plant. The word "law" here has a meaning that it has not had before.

When we consider the psychology of animals, we are in a region that demands new laws continually as we ascend the scale. At the bottom, and universal in the animal kingdom, is the general sense of feeling. Spencer wrote: "That a unit of feeling has nothing in common with a unit of motion becomes more and more manifest when we bring the two into juxtaposition." Matter, motion and force were Mr. Spencer's only data for universal evolution, and they utterly fail to account for even the most elementary feelings. Of course, their failure only manifests itself more completely in the highest psychological regions. Besides general feeling, there are the sensations of hunger, thirst, warmth, weariness, pressure, pain, and many others that indicate conditions of the body. The laws that determine these are not those of dead matter and of the vegetable world, but something additional enters into these general sensations. And then there are the special senses —sight, hearing, taste and smell—that act in certain ways that we call laws; but they are different from anything else.

The endless number of instincts in the animal kingdom, which contribute to the welfare of each species, call in vain for some adequate explanation of their existence. In "Organic Evolution Considered" I have

called attention to a few of these instincts, and especially to those of the honey-bee, and, as I believe, have shown that they could not have been produced by the process of evolution. Instincts are the untaught and unimprovable psychological powers which animals possess by inheritance. We can imagine that, in some sense, instincts are subject to laws; but they are different from all that precedes. Something, we know not what, has been added to produce them.

Leaving these things, we consider briefly the mind of man with regard to law. I am not proposing to consider here the question of the evolution of the human mind from that of the lower animals. The gulf between the mind of man and that of the lower animals is practically infinite. Mr. Darwin and others have tried in vain to bridge the chasm by evolution. They have assumed that the difference between the mind of man and that of the lower animals is that of degree and not of kind. And yet Mr. Darwin's admissions show clearly, I think, that the gap can not be closed. He says: "There can be no doubt that the difference between the mind of the lowest man and that of the highest animal is immense." The following is a summary of his admissions. The "anthropomorphous ape," "taking a dispassionate view of himself," admits "that he has never thought of fashioning even the simplest tool; that he can not follow out a train of metaphysical reasoning, or solve a mathematical problem, or reflect on God, or admire a grand natural scene;" that "the notion of expressing definite ideas by definite sounds had never crossed their minds;" that "disinterested love for all things, the most noble attribute of man, was quite beyond their comprehension;" that he had no

knowledge of right or wrong; that he was totally ignorant of the meaning of that "imperious word 'ought';" that he had no "self-consciousness, nor idea of individuality, nor general ideas," etc., for these latter faculties imply mental powers "advanced to a high standard" and "the use of a perfect language." This formidable list might be extended so as to include, if it does not already, the whole history of man; all arts and sciences and education and religion—everything that man thinks, feels and does, and which no animal can in any way perform.

Man is the only being who can consciously live in the present, past and future. He alone is self-conscious —conscious of his own existence; he alone has an idea of right and wrong, can form abstract ideas, can enter into a chain of reasoning, recognize the past and consciously appropriate its lessons for the present and the future, lay hold on the future by faith and hope; he alone is capable of disinterested world-wide love, that love which is godlike. Man alone can recognize God and render him worship. He possesses many psychological powers that we need not try to enumerate. Shakespeare speaks of man as follows: "What a piece of work is man! How noble in reason! How infinite in faculties! In form and moving, how express and admirable! In action, how like an angel! In apprehension, how like a god!"

Man, with all his other powers, without a will would be helpless. The will is as the mainspring to the watch, as the drive-wheel to the engine, as the steam to the locomotive. It drives the human engine to carry into effect its conscious purposes. The will is free. This freedom is the fact that we are free to choose between

motives. We are thoroughly conscious of this fact in our own lives. This consciousness is fundamental, and we are no more called upon to prove its existence than we are to prove that we see or think. Our idea of right is based on the freedom of the human will, for without such freedom no act has moral quality. Conscience exists because we recognize that we are free to choose between motives.

I suppose that in some sense the faculties of the human mind act according to laws; but the laws are entirely different from those in the animal, plant and inorganic realms. The powers of the mind have not been derived from anything below them. Mind is the dominating factor in the world. It organizes, disorganizes, constructs, destroys, invents, utilizes, and does a million things that nothing else can do. Without the mind of man, the materials and forces of nature would be but waste. Without the dominating mind of man, there would be no worthy end of earthly things. His dominion extends to all kinds of matter and forces of nature, and over the plants and animals that exist in the world. He has modified and utilized for infinite purposes, by the exercise of his mind, the whole world.

Man is not a lawless being. At every step he has obeyed the laws of the things with which he has dealt. In chemistry he has succeeded because he has obeyed the laws of chemistry. In physics he has taken advantage of mechanical laws and of the laws of the forces with which he has dealt. In dealing with plants he has recognized the laws of plant life; and with animals he has observed the laws of animal life. The farmer is just beginning to realize that plants are related in definite ways to soils, food supply, moisture and sunshine,

and that he must recognize the laws of plant growth if he would be successful in farming.

Here the mechanist comes in and says: "I told you so." "All things are in the grasp of law, and we can't escape it. Man's life is determined by laws that he can't evade. He is not responsible for his acts," and so this objector lands in determinism. He forgets that he has used the word "law" in a number of different senses; that the laws in the lower realms do not determine those in the higher; and, especially, that the human mind is free, and takes advantage of all laws in all realms to accomplish man's purposes. It is this fact especially that gives us the assurance that the world is not a mechanism run on mechanical principles alone.

Here is a large quantity of heat, which, if left alone, would be radiated into space according to the laws of radiation. The inorganic world alone can not utilize this heat, and so it is radiated into space without doing any work. But here is a man, with his dominant mind, who will utilize it for practical purposes. He may cook his food with it, warm his body, distribute to his neighbors for household purposes, reduce many metals from their ores, or set the world on fire with it, if he chooses to do so. Or he may use this heat in a steam-engine and compel it to grind grain, saw wood, crush rock, hoist loads, run trains, fly air-planes and drive ocean steamers. Or, again, he may run a steam-engine which drives a dynamo, thus producing electricity, which runs street-cars, produces incandescent and arc lights, while some of it may be converted into heat again, with which to cook food and warm apartments. This same electricity might be made to do the work of an electric

furnace, and thus manufacture most valuable commercial compounds. Or it might be used to reduce various metals from their compounds, and deposit others, as is done on a large scale in the mining industries. Or, again, the electricity might be used to charge magnets, which serve many purposes.

In the inanimate world it was heat going to waste. Under the control and by the inventions of man, the same heat is made to serve a large number of useful purposes. In both cases it was acting according to the laws of heat. It is evident that without the controlling influence of mind none of these things could have been accomplished. Mind brings to pass an endless number of things that could never occur without its controlling power. It has turned the world upside down and modified it in millions of ways. Mind is not ruled by the forces of nature; but, on the other hand, it guides all forces and compels them to serve beneficent ends. It has acquired dominion, and has subdued nearly all within its reach. It has searched the depths of the oceans in quest of treasures; it has brought forth the jewels and precious metals from their secret places, and the more abundant metals and coals from the hills and mountains. From down deep in the earth it has brought up mineral waters, illuminating gas and oils that have been lying in wait for ages. It has sent forth its magnificent ships freighted with the commerce of civilization, and they have returned bearing the products of other lands. It has netted the land with innumerable wires over which messages fly on the wings of the lightning. It has planted its cables in the depths of the oceans, thus binding the continents together, thus anticipating the brotherhood of nations. It flashes its wire-

less messages through thousands of miles, and the unseen pulsations are caught, to the salvation of multitudes who would otherwise perish. By means of the ever-present telephone it has helped to revolutionize commerce, and has made neighbors of the inhabitants of neighborhoods and of great regions. It invents mighty printing-presses, which turn out in an hour millions of newspapers, which are distributed speedily throughout the land. Time would fail were I to try to enumerate the achievements of the human mind along the lines of art, science, commerce, education and religion in their details. The earth is the storehouse of the fruits of the achievements of mind.

But we are considering the question of universal law. Mind has made the world all over new. Eliminating man from the world, the laws of nature would make this world a wilderness. It is evident that the laws of nature below man have not created him. Let us consider the word "law" more carefully.

The inorganic world, as far as we can see, is made up of matter and force. Force is that which moves matter; and, without force, matter would have no motion. All mechanical changes consist in force moving matter. All the work that man can do is done by the application of force of some kind to the moving and shaping of matter. Each force acts in definite ways, and these definite methods of action we call laws. This is the sum of laws in the inorganic world. Man simply directs the forces of nature into various channels, and they do their work by certain methods. Man is not subject to the forces that he uses as tools, but he directs them. In doing things with these forces as tools, he

recognizes that a hand-saw is not a smoothing-plane and that an augur is not a file.

There is no room, so far as man is concerned, for the words "determinism" or "fatalism"; for his free will dominates all. He is not the slave, but the master, of the forces that he guides. He is not in the grip of the lower world, but is its supreme master. Man, in using the heat to which I have referred in bringing about the great number of results named, has done a work of great complexity in converting this heat into various forms of energy by the use of special machinery; but in doing these things he has simply taken advantage of the so-called laws or methods according to which these forces act. He has directed them to the accomplishment of intelligent purpose; he has exercised supreme lordship over matter and force.

We pass from the inorganic world up to plants, which obtain their food exclusively from the inorganic world. In plants a new force arrived that could modify the whole surface of the earth and clothe it with living vegetation. The plant organism as a whole is antagonistic to the mineral world. Its body is composed mostly of complex compounds that do not exist in the inorganic world. The plant has the power to decompose a variety of minerals and thus obtain food with which it builds up its own complex living tissues. When the plant dies it returns to the inorganic world, and may serve as plant food anew. The same materials may serve repeatedly as food for plants. The plant, in doing its wonderful work of converting dead materials into living tissues, is not dominated by the forces of the mineral world. It overcomes the chemical forces of the minerals from which it obtains its food, and

builds up the materials into a great number of complex compounds, many of which serve as food for animals. I have no doubt that the plant does its work according to certain methods which we call laws.

Passing upward to the animal world, we find organisms that must have as food the complex substances which plants have prepared from the inorganic world. Animals are further away from the mineral world than are vegetables. The life forces that they possess organize into tissues a great number of compounds that the vegetable world can not prepare. We presume that the animal functions are performed in definite ways that we call laws. But in the animal world we meet with certain phenomena that do not manifest themselves in the vegetable kingdom. Among these are sensations of many kinds, special senses, instincts throughout the animal kingdom, and, finally, mind, with its multitude of powers which enable it to dominate the world. We presume that definite methods prevail throughout the psychic world, and these methods we call laws. The actions of the lower animals are brought about by various powers, and to these powers we give special names. It is evident that these various psychic powers, in ascending scale, could not have been derived one from another, and that their laws are independent of each other. For example, the separate instincts of the honeybee could not have been derived from each other. One special sense could not have been derived from another.

Laws are simply the methods according to which events occur in nature. Laws are due to the action of forces—dead forces in the mineral world, living forces in all living things, psychic forces in all animals, and the highest psychic forces, the faculties of the human mind,

in man. Without the methods by which the various forces work, and his ability to grasp these methods to a certain extent, man would perish. All of his foresight and progress is built upon his knowledge of methods, or laws, as we are accustomed to call them. The human mind is the legal tribunal for the methods of things.

Men have sometimes used the word "law" as if it were a fearful implement. Some have spoken of it as if it were God. The expression, "The Reign of Law," has cast a shadow over many a human soul, bringing fear and trembling. God is a God of law, a God of method; and this is necessary for man's very existence. Again, I say, man is not in chains, is not in slavery, but is supreme over the laws of earth. The powers of his mind enable him to dominate all the powers below him. No living thing could live in a world of anarchy. A lawless universe would be a godless universe.

The things that happen are the resultant of all the forces that are acting at the time of an event, and that may have been acting in the past toward the event. The law of resultants is well known in physics in the motion of masses. Few, if any, motions are brought about by the action of a single force. As a rule, some one force so predominates that the work done is attributed to that force alone.

When the human mind is at work, it determines resultants by selecting, combining and directing forces in all conceivable ways. The mind has the power to convert the potential energies of the human body into kinetic muscular energy, and through this to direct the various forces by which all work is done. Mind multiplies resultants at pleasure and without limit. It rejoices in its godlike superiority of dominion.

VIII

GOD IN THE WORLD

TIME and space are infinite. We can not conceive the beginning nor end of time, nor a region beyond which there is no space. They are self-existent.

Within this infinite space the great telescopes reveal many thousands of suns that we call stars, all of which are at immense distances. Most of them are so far away that we have no means of estimating, even approximately, their distance from the earth. Some of them are known to be much larger than our sun, which is more than one hundred thousand miles in diameter. Many of them are so distant that it would require thousands of years for their light, traveling at the rate of 186,000 miles a second, to reach the earth. We see a star, not as it actually is at present, but as it was many, perhaps thousands, of years ago, when the light that we receive started from it. The stars have various degrees of temperature: from those that have ceased to be luminous, up through various degrees of red, to stars that are heated most intensely white. The stars are suns, and, judging from our own solar system, they doubtless have innumerable planets revolving around them, many of which may be peopled with living beings.

The physical universe is to us practically infinite. The earth is but a grain of sand compared to the infinite mass of matter that is known to exist.

The spectroscope reveals the fact that the sun is made up of materials like those found in the earth. It is known that stars which have been examined contain hydrogen and other materials that exist here. It seems evident that the universe is composed of a few elements that constitute the mass of the earth. Less than a hundred simple substances are known to exist here, and only a few of these are found in abundance.

The sun and the stars are daily radiating into infinite space immense quantities of heat and light. Most of the heat and light that the sun radiates is lost to the solar system, and, unless there are enough stars and other material bodies to intercept it all, it must travel on forever through infinite space. And so of the radiant energy of the stars. The sun and stars could not have existed through an infinite past in their intensely heated condition, because no finite body can radiate an infinite quantity of energy. They have all been heated within finite time, and within comparatively recent time; otherwise they would have radiated all of their radiant energy into space, and be at present cold, invisible bodies.

There is no physical theory that can account satisfactorily for the mighty hosts of stars, each highly heated, circling through infinite space, each in its own orbit. We can hardly imagine that all the matter of the universe was originally one highly heated, revolving mass, and that in some way this mass became separated into the countless worlds that are widely scattered through space. We can imagine that the sun and stars have been heated by collisions with other masses of matter, but we know of no way by which the great

number of worlds could have come into existence as separate masses before they collided.

"In the beginning God created the heavens and the earth." The Hebrew writer could not have made this statement as a scientific conclusion, for he had no science. It could have come only as a revelation from God. The infinite Designer made himself known to man. "Look at the heavens and the earth; they are my work," he said to man, as he gazed in blank wonder into the infinite heavens. The conclusion that "God created the heavens and the earth" was a revelation is based on the scientific method. It could have come in no other way. We are justified in attributing a sufficient cause to every event.

The announcement that "God created man in his own image" is an evident revelation. It brings man into the most intimate relation, into the most exalted fellowship, with the Creator of the universe. It is the assurance that man can think God's thoughts correctly, and hold communion with him—a declaration of the immortality of the soul of man, because it is the image of the immortal God. Man was no dreamer when that idea came to him. It came from God.

Let us next consider some of the evidences of design with regard to the earth. Emerson has said: "Nature is too thin a screen: the glory of the omnipresent God bursts through everywhere." Thus spoke America's most celebrated writer. Bacon said: "I had rather believe all the fables in the Talmud and the Koran, than that this universal frame is without a mind."

It is an old and true saying that "the stream can not rise above its source." It is also true that the things that exist on the earth can not be more exalted

than the power that created them. I have elsewhere written of man, who, by means of his mind, has dominated all forces and materials on the earth, and that he has thus demonstrated that his soul is not in the image of anything earthly. The mind of man, which unlocks the secrets of the universe, places him in a world infinitely above everything else on earth.

In speaking of design, I shall especially have in view the well-being of man as the central thought. Before doing this, however, it is important to consider certain facts in nature which have to do with the existence of any living thing upon the earth. As stated elsewhere, the earth underwent a long period of preparation before living things were introduced.

Animals and plants can endure a very limited range of temperature. The freezing and boiling points of water are practically the limits through which any of them can live, and most of them are limited to a much smaller range of temperature. The distance of the earth from the sun gives the earth a temperature that is favorable to living things. The daily and yearly motions of the earth, together with the inclination of the earth's axis to the ecliptic, thus producing a change of seasons, are also favorable to the distribution of heat, especially in the temperate and polar regions.

The existence of immense quantities of water over most of the face of the earth, and the movements of the ocean currents, greatly aid in the retention and the distribution of heat.

The general rule is that when substances pass from the liquid to the solid form they contract so that the specific gravity of the solid becomes greater than that of the liquid; but in the case of water it expands on

freezing, so that ice floats on water. This is a fact of great importance in nature. If it sank, it would not be melted in deep water in summer, and the lakes and parts of the ocean that are frozen in winter would become filled with ice and would destroy all life.

The evaporation of water into the air, at all temperatures, and the distribution of this moisture in the form of rain, dew, snow, frost, etc., for the benefit of living things, is most important.

Every living thing requires water. Water constitutes the greater part of the weight of most animals and of many plants, especially during their most active growth.

The atmosphere that exists everywhere around the earth, and that exerts an average pressure at the sea-level of about fifteen pounds to the square inch, is most important in connection with life. The air is a mixture of about 78 per cent. of nitrogen, 21 per cent. of oxygen, and 1 per cent. of argon, a small fraction of 1 per cent. of carbon dioxide (about one volume in 3,300), together with a variable per cent. of moisture and traces of other substances.

The most abundant ingredient (nitrogen) does not support combustion; but it dilutes the oxygen, which is the combustible element. It is of the utmost importance as a source of supply of nitrogen for plant growth, after having been brought by certain bacteria into suitable combinations to serve as food for plants. The supply in the air is practically inexhaustible.

Oxygen, the next most abundant element, is a necessary part of the atmosphere, for the reason that all animals must have free oxygen for breathing, which they obtain mostly from the air; while others, that live

in the water, obtain free oxygen from solution in water. If its per cent. were much increased in the air, conflagrations would become more destructive. If the air were mostly oxygen, the earth would be swept by fires.

Carbon dioxide in the atmosphere is but a small fraction of one per cent., but it is absolutely necessary. Ordinary plants obtain all of their carbon for growth from this source. It is absorbed by the leaves and the green parts of plants, and, under the influence of sunshine, the carbon dioxide is decomposed into carbon and oxygen. The former is retained for plant growth and the latter is given off into the air for the use of animals. The carbon dioxide is renewed continually in the air by the decomposition of organic matter and of carbonates, and by the ordinary combustion of carbon as fuel.

The moisture in the air, in addition to the purposes named, serves as a blanket to prevent the rapid radiation of heat by the earth into space. In a clear, dry atmosphere the nights are very cool, owing to the rapid radiation of heat by the earth into space; and the days are correspondingly hot.

I have considered briefly the position and motions of the earth, the existence and distribution of water, air and heat, and have shown briefly how they contribute to the existence and well-being of living things. It does not seem to me that either chance or evolution could have brought about so many things that are necessary for the existence of plants and animals.

But let us consider the elements—the simple substances—that must exist on the surface of the earth before living things could exist here at all. All plants and animals must have, as a part of their body, carbon, hydrogen, oxygen and nitrogen. The human body con-

tains sixteen or more elements. In addition to the above are calcium and phosphorus, which, together with oxygen, form calcium phosphate, which is necessary for bones; and calcium carbonate is the principal mineral in shells. Iron is a necessary part of the blood; sodium and chlorine, in the form of common salt, must be in the fluids and tissues of the body; other elements in the human body are sulphur, fluorine, silicon, potassium, lithium, magnesium and manganese. These sixteen elements are obtained from the food that is taken into the body. Most of these substances are known to be necessary constituents of the human body, and they were necessary to the plants and animals that furnished them as foods for man. These simple substances must be present in available conditions in the world before the organisms that require them could exist here. The preparation of these building materials for the organic world was not due to blind chance.

Let us consider this in some detail. Carbon, oxygen, hydrogen and nitrogen are a necessary part of the body of every living thing. By their union in all living things they form protoplasm, the "basis of life," which is the most essential substance in every living thing. Frequently, if not always, a little sulphur is included in the composition of protoplasm, and sometimes a trace of iron. This substance constitutes most of the tissues of animals except fats and the earthy part of bones.

Protoplasm, under different names, differs much in its physical and chemical composition; but it always contains the four elements named, and generally sulphur, and sometimes a trace of iron. The formulas for proteins are extremely complex, being composed of a great number of atoms. For example, the formula for

haemoglobin of dog's blood contains 2,378 atoms. The great complexity of the proteins, with the fact that they contain a large per cent. of nitrogen, an element of feeble affinities, indicates that they are very unstable—that the molecules readily go to pieces.

The diamond in its colorless crystalline form is pure carbon. Plumbago (or black lead), charcoal and anthracite coal are other forms of carbon, mixed with more or less impurities. A large part of the carbon in the world has been deposited from vegetable growth as bituminous and anthracite coal, and as lignite and peat, for the service of man. Petroleum and natural gas in immense quantities are composed largely of carbon and hydrogen, both of which are highly combustible. A large quantity of carbon is locked up in the form of carbonates of calcium (limestone), and carbonates of iron, copper and other metals.

In the early geological ages the air was much richer in carbon dioxide than it is at present. The carbon of all coal must have existed as carbon dioxide in the air before plants could have furnished carbon for coal. At that time the air contained too much carbon dioxide for the existence of the higher animals. It is the suffocating gas that all animals exhale with every expiration. Beyond a certain per cent. in the air, the higher animals can not live in it.

But, as stated, plants get all their carbon from the small fraction of one per cent. of carbon dioxide in the air. If carbon had been absent from the earth, no living thing could exist here. The life of plants depends on the one volume of carbon dioxide in 3,300 of the air, their only source of supply. This small fraction of one per cent. furnishes abundance of carbon food for

plants, and it is not injurious to animals. Plants are adapted, by their millions of breathing-pores in their leaves, to breathe it in; and in that most wonderful of all laboratories, chlorophyl, by the aid of sunshine, to decompose it and to elaborate the carbon into protoplasm, starch, sugar, woody fiber, and into many other complex compounds that are of use to both plants and animals.

But see the narrow escape that occurred here, that left but a small margin for life. It is easy to imagine that the various metals with which carbon dioxide combines to form carbonates might have drained the air completely of all the carbon dioxide it contained, thus leaving the land forever destitute of all plants and of all animals dependent on plants for food. Blind chance did not see her opportunity and prepare this element in so many useful ways.

Oxygen is a gas. It is the most abundant of all elements in the known part of the earth. It constitutes nearly half of the crust of the earth, eight-ninths the weight of water, and from one-fourth to one-fifth the weight of the atmosphere. It combines with nearly all the known elements. It is a necessary part of all living things. It was necessary that it exist in combination as solids, combined with hydrogen as water, and free in the air for animals and plants. Its most abundant compounds in the crust of the earth are silica, silicates, carbonates and oxides. These, for the most part, are very insoluble in water, and they furnish stable materials for the crust of the earth and many valuable minerals.

It was necessary that it should exist in great excess over other elements. The amount that forms nearly

half the weight of the crust of the earth is enormous. Owing to its great affinity for the other elements, the whole supply would readily have combined with the minerals that form the solid crust of the earth, if sufficient amounts of these had been available; but we find that, after all available materials to form solids had been oxidized, there was still an enormous volume of free oxygen left, which combined with the gas, hydrogen, and formed enough water to cover the whole earth about two miles in depth. Water is absolutely necessary for all living things. And still this great amount did not exhaust the supply of free oxygen. There was enough left free in the air for all forms of life. It was necessary for life that oxygen exist free, in combination to form water and also the solid crust of the earth. Can we imagine that blind chance foresaw the necessity of the element itself to living things, and determined not only that it should be, but that it should exist in the enormous quantity required? Verily not. Intelligent foresight and beneficent power alone will account for it.

Hydrogen, the lightest known substance, exists on the earth mostly in the form of water. It is a necessary part of every living thing. Without it, living organisms could not exist. If it had been greatly in excess of what it is, it would have robbed the air of its free oxygen to form water. Hydrogen is the chief element that combines with carbon to form natural oils and the various kinds of petroleum. It is also an important constituent of the various bituminous coals, of woody fiber, and of most of the tissues of plants and animals.

Nitrogen is a fourth element that is necessary for the existence of all living things. It is mostly free, as

a part of the air, of which it constitutes about 79 per cent. It is noted for its small range of chemical affinities, for it combines directly with but few other elements. Chemically, it stands almost at the other extreme from oxygen, which unites with almost every element. On account of its feeble chemism its compounds enter into most of the explosives that are used in warfare and elsewhere. It serves to dilute the oxygen of the air, and it furnishes a perpetual supply to bacteria, which prepare its compounds as food for plants. It helps to form the living, working tissues of all animals of which muscular tissue is the most abundant.

If nitrogen had existed in the earth in small quantity, it might all be locked up in nitrates, ammonium compounds, and other compounds which are very soluble in water; and it might all be washed down into the ocean, where it could serve no good purpose in supporting land plants. Its abundance furnishes an inexhaustible supply for plants. It is also being oxidized artificially in great quantities to form nitric acid, from which nitrates are formed as fertilizers and for other purposes. The hand that put nitrogen in the earth, as one of the elements necessary to build living things, and assured a perpetual supply, was guided by intelligent foresight.

I have considered the fact that the above four elements must be in the world before any known living thing could exist. Not only that, but they must be here in the proper quantities to insure the various things required by living organisms. It was a question not only of the *quality* of the elements, but also of their relative *quantities,* that would insure the existence of

living things. From what I have said, we see that both purposes have been wisely served. We are here in a region where neither chance, nor atheistic, nor agnostic evolution can meet the case. It required an intelligent, living God to prepare the materials for the construction and welfare of living things.

Twelve other elements enter into the composition of the human body, that I have not considered in detail. Sulphur, phosphorus, chlorine, sodium, potassium, calcium, magnesium and iron, we know, are necessary. If any one of these elements had been as relatively abundant as oxygen, the earth would have remained a desert waste. If one of them had been omitted, man could not exist. The probability, according to any doctrine of chance, that no one of these would be omitted and that they would exist in the proper relative quantities favorable to man's existence, is utterly beyond the range of human reason.

But the preparation of the earth for man went infinitely beyond providing the materials that were necessary for his existence. The earth has been blessed with a countless number of things that man has been able to utilize for his comfort and welfare. With his ever-growing knowledge he has converted to his use the objects and forces within his reach. The foresight that planned his existence intended that he should reach the highest material and spiritual point of prosperity. The means were placed within his reach to call forth his greatest activity of body and the highest intelligence and wisdom that can possibly be attained.

The world was made a great training-school, in which all things were placed for the training of man. The material prizes are given to him who with the keys

of knowledge unlocks the doors to the halls in which Nature has kept hidden many of her most valuable secrets. Witness, for example, Edison, who has taken out many hundreds of patents, and has wrung from the very heart of nature many of the greatest things that bless the world. The commercial value of his inventions mounts into untold millions of dollars, while the moral and intellectual value of his achievements, which proclaim the patient, persistent, thoughtful dominion of mind over material nature, is beyond price.

"Subdue the earth" and "have dominion" was the ancient command that still has all the vital power that it had in the beginning. Man is ever coming into his own. The doors of nature, with increased velocity, are opening wide and revealing the treasures that lie beyond. Each open door reveals another that invites the key of knowledge.

The savage sees little in the world, and he seeks the simplest means of eking out an unfruitful existence. He knows little of the metals and jewels and the many rich treasures that lie hidden in the earth. He is generally ignorant of the most valuable products of the soil. The trees of the forest are of no worth to him. The ocean is an unknown infinity, peopled with objects of fear. The heavens are filled with dread omens. The world is often peopled with frightful ghosts. He has learned no use for most of the things that are found in the world. The little world in which he lives is to him a poor training-school.

But when we turn to the man who has learned to subdue and have dominion, we see a transformed being. This man searches the heavens, the earth and the sea for treasures. He brings up from the depths of

the earth the ores of iron, copper, aluminum, lead, zinc, manganese, and ores of other metals, reduces them, and uses them for a thousand useful purposes that help to improve the world as a habitation for men.

Without iron, especially in the form of steel, the wheels of civilization would stand still. Without copper, the manufacture of electricity would be crippled and largely destroyed. The quantity of these two metals used every year, more than anything else, perhaps, marks the material progress of civilization.

The means of rapid transit by the use of steam and electricity, the telegraph in its various forms—on land, submarine and wireless—the telephone and phonograph, moving pictures and electric lights, are a few of the recent steps taken towards subduing the earth.

The adaptations of the thousands of things in the world to the supply of man's wants are evident. For the most part, the raw materials are placed before him, and it is necessary that his knowledge, skill and inventive genius be brought into action to convert them to his use. The attainment of most of the great blessings is made an educational process, by which man is brought into closer communion with nature.

Did it just happen by chance that iron, the most useful of all metals, is one of the most abundant and easy of access? Did chance provide in abundance the coal and the limestone that are so necessary in reducing iron from the ore to the metallic form? Did chance provide the various rarer metals that are necessary in the manufacture of steel of various qualities? Did chance deposit the abundant ores of copper, lead, zinc and manganese, and the gold, platinum, silver and mer-

cury? Without dwelling on this further, it is evident, I think, that a being who had intelligent purpose not only provided the materials necessary for the construction of man's body, but ten thousand things besides, that contribute to his comfort and welfare.

In this chapter I have said nothing about man himself. In the Patent Office at Washington are many thousands of models. These models embody the thoughts of the thousands of people who desired patents on their inventions. A great many of the models represent machines that could be used in doing useful work. Many of them represent the highest intelligence and skill, and some of them stand for many years of patient thought and labor. If, after having examined these models and seen many of them work, the observer should conclude that they just happened by chance, and that the mind of man had nothing to do with their existence, we would without hesitation decide that the place for this person was the asylum for the insane—and the ward for the most demented.

If among these models we should find one machine that could devise the most complicated and valuable machine in the Patent Office, and compel it to perform the most useful work; if this one machine, among the thousands of dead models, were alive and charged with power by the use of which it could move and work and invent all successful models in the Patent Office—we would be obliged to look upon it with wonder, and we would declare that this living, self-moving, self-repairing, devising, directing machine, that knew all the secrets and all the possibilities of the ten thousand machines by which it was surrounded, was supreme over all the inventions of men. If the models showed

the unmistakable design of man, did not the man, the master mechanic, show beyond doubt that his Maker designed him? I do not see how we can escape this conclusion.

Man's body is the most wonderful mechanism in all the world. His many bones serve in the best way for protection and as levers for motion. To the bones, the muscles, made up of countless fibers, are securely attached by ligaments and tendons. The muscular fibers are made to contract by the aid of the nervous system, and they give infinite varieties of motion to the trunk and its members. Many tissues compose the various organs of the body, each of which serves its special purpose. The brain, made up of an infinite number of microscopic cells and fibers, sends its afferent and efferent fibers, like telegraph wires, to all parts of the body, over which messages travel to and from the brain as a center. This system of telegraphy is vastly more complex than is the most complicated office. Stations of communication with the brain, in endless number, are located in all parts of the body. Through the nervous system the body experiences sensations of many kinds and for special purposes, that give knowledge of its own condition and of the external world at all finite distances.

Man has a conscious memory, which brings the past into the present, and enables him to utilize past experience. He has the power of reason, which co-ordinates experiences and draws logical conclusions. He has the power to observe facts and to know the truth, and to make them contribute to his purposes. He has an imagination that constructs an ideal world and enables him to live in an ideal future.

With his special senses he lays hold on the material universe. His eye receives the light that has traveled for thousands of years from distant stars. The eye responds with pleasure to all the shades of color that come from the rainbow and the clouds, and that are flashed from the sparkling gems by their many facets. It revels in the shapes and colors of beautiful flowers, and the wonderful plumage of birds, and the many-tinted shells from the depths of the ocean. It glories in the gorgeous sunsets, in the mighty expanse of the ocean, in valley and mountain, in river and lake; in grazing flocks and herds, and in fields of verdure and waving, golden grain; it revels in the forests of trees of noble growth, among whose branches dwell securely beautiful birds of joyful song, that build their nests in hope, to rear their young. Through the eye of man are revealed to him the infinite glories of land and sea and of the countless worlds above. It is the one avenue through which enters his mind beauty of form, motion and color—the one sense that enables him to lay hold on all materials and forces, and bring them under his dominion. "And God saw everything that he had made, and, behold, it was very good."

The ear enables man to hold converse with his fellow-men in audible language that conveys all shades of thought and feeling. Through the sense of hearing enter the human soul the terrors of hell of the modern battlefield—the deafening roar of the mighty cannon, the demoniacal shriek and bursting of shells, the groans and piteous cries of wounded and dying men—a pandemonium of all the discordant, heart-rending sounds of hell combined.

The same ear can drink in with delight the joyful songs of the birds, the soft music of the brooks rippling over the stones, the soughing of the wind at eventide among the trees, the sacred music of the chimes calling to divine service, the rich and stately music of some great choir, the more than angelic notes of Melba or Caruso, the divine strains of the violin in the hands of Kubelik, the rich melodies that flow from the piano under the magic touch of Paderewski, the stately and magnificent voice a great cathedral organ sends forth in response to the touch of a master hand, a symphony by Beethoven rendered by some great orchestra, flooding the world with music—all these and vastly more flow in through the ear, as food to the soul. "Music hath charms to soothe the savage breast, to soften rocks, and bend the knotted oak." "He that made the ear, can he not hear?"

The sense of taste is gratified by ten thousand flavors of delicious foods that nourish the human body.

The sense of smell revels in the sweet fragrance distilled from the plants of forest and field, and from the many sweet flowers that bloom in this garden of God.

The senses of touch, temperature and pressure are more local in their action, but they enable us to determine certain conditions and qualities of things and our relations to them—all of great importance to the welfare of man.

Thus we see that the doors of special sense are great avenues to the soul of man, through which enter countless facts from the external world. Without these senses man's existence here would be impossible. They open up to him infinite fields, and enable him to enter, subdue, and have dominion. If the printing-press shows

design by man, then man, the designer, is evidence of a still greater Designer. The designer is greater than the thing designed. If the creation of the press required thought, the creation of man, with his world-wide relations and powers, demanded intelligence vastly greater than that of man.

In this chapter I have not considered man as a moral, religious and spiritual being. Conscience determines the moral quality of things, and compels man to decide that one thing is right and another wrong. It gives the feeling of responsibility for human conduct. No animal has conscience. The train of mathematical reasoning which led Le Verrier to the discovery of the planet Neptune lifts man infinitely above the level of the brute creation.

Faith and hope and universal Christian love, which lead men and women to sacrifice all in order to redeem humanity in every land and every clime, proclaim man's divinity.

Man's spiritual nature calls for a living God. He has an essentially religious nature, though it may be weighted and cramped with a thousand superstitions. When God is properly presented, as is being done in equatorial Africa, men forget their heathen customs, become clothed in body and in their right mind, and become joyful worshipers of the one true God. The transformation in many cases is most radical and permanent. Human nature everywhere responds to God. A belief in God and Christ brings joy and gladness to men who for ages have sat in spiritual darkness. "If you knew about God and Christ, why did you not come sooner?" has been an urgent question asked by the blacks on the Congo. These people are

hungry for God and Christ, though they have sat in darkness thousands of years. A knowledge of the one God who created the heavens and the earth, and a belief in him and a feeling of responsibility and obligation to him, transform the souls of men and lift them into a new spiritual world where they enjoy the fellowship and love of the Father as revealed by Christ. Men want God the Father as Christ has revealed him. "He that hath seen me hath seen the Father."

Man's innate cry for God points to the fact that God is; for we know that every natural desire possessed by man finds ample means for its gratification. A godless universe, when the soul cries out for the living God, would be a contradiction in the spiritual world. "What and whence this strange desire, this longing after immortality?" The aspiration is the pledge of God in the soul, the assurance that the soul can not cease to be. "In the image of God created he him." This image does not cease to be.

I have written enough about design. The man who can not see God in the things to which I have referred would not believe though God should speak to him from heaven with the voice of the seven thunders and the terrible lightnings of Sinai.

There remains untouched the great world of life, composed of hundreds of thousands of species. Undoubtedly they manifest design in infinite and marvelous ways. The fact that they live and propagate their kind shows that they are adapted to the conditions under which they live. It is not necessary that I should see design in every living thing before I conclude that there is design in the things created—no more than it would be necessary for me to understand every model

in the Patent Office before I might conclude that there is design in any one of the models. Design shown in one case shows that there was a designer. The fact that we can not see the design does not prove that it does not exist. The civilized man sees design in a thousand things that escape the savage. Ignorance can not interpret God's works.

This subject opens up too wide a field for me to enter. Besides, as stated, I do not deem it necessary to the argument. There is one manifest purpose that all organic beings serve, and that is the enrichment of the soil by the decomposition of their bodies after death. Organic remains are decomposed largely by bacteria, the lowest of organisms, thus furnishing food for plants. The despised fishing-worm is one of the most important agents that render the soil more fertile. Mr. Darwin has written a book on this subject.

IX

MIRACLES

WHEN God does something which the processes of nature could not do without his aid, we call it a miracle. The raising of the dead, the turning of water into wine, the sudden healing of a leper, were miracles. We recognize at once that in each of these cases a work is done that nature could not perform. But God may direct the forces of nature in such a way as to perform miracles. It is said in Exodus that "Jehovah turned an exceeding strong west wind, which took up the locusts, and drove them into the Red Sea."

Again, it is said that "Jehovah caused the sea to go back by a strong east wind all the night, and made the sea dry land, and the waters were divided." It is apparent from the circumstances that these winds would not have thus blown except for the intervention of Jehovah for these special purposes.

It is evident, from what I have stated in the chapter on theistic evolution, that no miracle can be included as a part of the process of cosmic evolution, whether the theory is theistic or atheistic, because it would be a break in the necessarily continuous process. The difficulty here is irreconcilable—the miracles of Christ must be denied if cosmic evolution is true. Some have tried to escape the difficulty by calling the cosmic theistic process of evolution a continuous miracle, but this is

no solution. It is only a statement that theistic evolution is a universal process. It can not include the miracles of Christ.

I have called attention to the fact that evolution is only a theory, and that it has no standing as the universal science which it must claim to be. The man who accepts it, even as a working hypothesis in teaching, will find that he has a hopeless case when he tries to adjust its claims to the teaching of Christ. He will find, also, that the authors who have written the texts on the basis of evolution repudiate all miracles. I feel sure that no exception to this can be found.

I am not saying that one can not accept parts of evolution and still believe in miracles. In such a case a man ought not to deceive himself by thinking that he is a cosmic evolutionist. The theory of universal scope is that which all the great evolutionists accepted and tried to establish.

If I believed in cosmic evolution, I would be compelled to say miracles are impossible. No ground would be left on which to base them. Regarding evolution as only a theory, the way is open to consider miracles.

I do not, however, deem it important to give much time to this subject, after what I have written in previous chapters. To my mind, various special acts of the Creator were necessary during the process of creation. I have called attention especially, in the previous chapter, to the preparation of the elements of proper kinds and in proper quantities for the existence of living things upon the earth, and especially to the multitude of elements that serve to form man's body, and the many others that serve the purposes of civilized man. This preparation was due to intelligent, miraculous power.

I have called attention to the fact that Mr. Darwin claims that life was "originally breathed by the Creator into a few forms or into one." He felt obliged to begin with a miracle. As we ascend the scale of life we come to many places where any theory of evolution fails, and where it demanded special acts of the Creator in order to ascend. This is true with regard to many physical structures, and remarkably true as we ascend through the psychological world, from the simplest feeling of the lowest animal up to the mind of man, with its multitudes of wonderful powers.

An automobile could never come into existence by natural processes without the aid of man. In constructing it, man has only availed himself of the materials and forces of nature, and has strictly obeyed their laws. This human miracle was not a lawless process, but at every step the forces of nature were directed according to their laws. Were God to make an automobile as man makes it, its manufacture would be a miracle, and yet no law of nature would have been broken. Man blows blasts of air for carrying sand and other materials. God caused the wind to carry the locusts into the Red Sea. We know how man moves the air, but we know not how God moved it in performing a miracle. Both show the dominance of spirit.

Man directs power, by intelligent purpose, to the performing of special work—work that could never be done without his mind. He is the great disturber of the processes of nature. He has turned the world upside down with his human miracles. Without him the earth would be a wilderness in which thoughtless beasts would reign supreme.

A miracle is the triumph of an intelligent, higher power over the powers that be, in accordance with laws. Law is a most beneficent provision that God has made, by the knowledge and aid of which man can dominate the world. That the sequences of nature take place according to certain definite methods insures the success of man. All things that he does with intelligent purpose are human miracles. That God has less liberty of choice and execution than has the man that he has made is incredible. That he has so bound himself that he has less freedom than man, in the affairs of the earth, is beyond belief. That natural processes known to man are God's only methods of doing things, we can not logically conclude.

The fact that man's spirit was made in the image of God is assurance that God specially cares for him. It is conceivable and probable that God, in promoting man's spiritual good, has made himself known in revelations, and answers to prayers, and by special works, all of which were miracles, or of a miraculous nature.

The chief end of all things on earth is spiritual. Without this aim, the world would lapse into gross materialism. "God is a spirit: and they that worship him must worship in spirit and truth." The vital relation between the spirit of man and God is the supreme end of man's existence.

Science, as such, knows nothing of miracles. It does not lie within her province to either affirm or deny them. They are beyond her domain. For her to declare their impossibility is a dogmatic assumption. Science knows not the possibilities of the universe, nor all the ways of God. The striving, praying, yearning souls of men, crying out for the living God and seeking

immortality, speak volumes that science can not understand. The measure of the soul's aspirations, or of faith and hope, or of a mother's love, is not according to the standards of science. The soul of man sits veiled in flesh, but it seeks and knows the light, and believes that infinite opportunities lie beyond.

The only perfect being, clothed in human flesh, who ever trod the earth, claimed, when here, that he worked miracles. This witness is unimpeached and unimpeachable. If the record of his miracles were stricken from the Evangelists, his veracity as a witness would perish. These miracles are so natural and so interwoven in the narratives of his life that they can not be eliminated without destroying the value of these biographies.

It is said repeatedly that after witnessing Christ's miracles the people believed on him. For the most part, his miracles were works of mercy; but they attested his divinity. No man could do the works that Christ did unless God was with him, and God would not be with an impostor. "I came down from heaven to do my Father's will." He placed the highest value on his miracles as evidence when, in answer to John's inquiry as to whether he was the Christ or not, he said to John's two disciples who had been sent: "Go and tell John the things which ye hear and see: the blind receive their sight, and the lame walk, the lepers are cleansed and the deaf hear, and the dead are raised up, and the poor have good tidings preached to them."

The tendency among many of late has been to force Christ down onto the purely human plane, but the true Christian heart will ever crown him King of kings and Lord of lords.

X

THE METHOD OF EVOLUTION*

A VOLUME entitled "The Method of Evolution," by H. W. Conn, of comparatively recent date, is worthy of consideration. This writer is an avowed evolutionist, who claims that the *fact* of organic evolution has been established beyond doubt, so that it need not be further discussed. He says: "We find nowhere to-day any thought of discussing this question any more than discussing the truth of the law of gravitation. We have less of this discussion than a few years ago simply because science regards it as beyond discussion and accepts it as a demonstrated conclusion." He also says that "it would probably be impossible to find among modern scientists any one who would venture to hold any other opinion." I presume that such a rash person would be under taboo! a curse that pursues unto death. By the array of scientific talent which admits the *fact* of evolution, one is, especially if young, practically barred from considering the question at all; for by so doing he would put in jeopardy his sound scientific training, if not his mental sanity.

But to me there are so many seeming impossibilities in any theory of evolution that I venture to call in question the truth of the above assumption.

*"The Method of Evolution." A review of the present attitude of science toward the question of the laws and forces which have brought about the origin of species, by H. W. Conn, of Wesleyan University, 1900.

The author's book bears the date, 1900. It had not been long before this (1892) that "Darwin and After Darwin," by Romanes, and "Evolution in Its Relation to Religious Thought" (1888), by Le Conte, were published. These able writers and others of the time dwell at length on evidence tending to prove the *fact* of evolution. They felt the necessity of doing this. My own belief is that to call evolution an established conclusion of science is to disgrace the word "science."

Organic evolution, as Professor Conn recognizes, is but part of the whole theory. The theory must be dealt with in its entirety as a unit, if we would deal with it properly.

The writer says: "For a long time the term 'evolution' was, to most persons, synonymous with the idea of organic evolution, the broader aspects of the problem being overlooked. The term 'evolution' is certainly much broader than the simple problem of the origin of plants and animals. At the same time it is so evident that organic evolution forms the keystone of the evolutionary arch, without which it would fall to pieces, that the whole debate for years centered around the problems of organic evolution."

Le Conte has said that "evolution is universal." "The process pervades the whole universe, and the doctrine concerns alike every department of science—yea, every department of human thought. Therefore, its truth or falseness, its acceptance or rejection, is no trifling matter, affecting only one small corner of the thought realm. . . . It determines the whole attitude of the mind towards nature and God." Evolution is regarded by some as the "universal science." It includes

all the materials and forces and events in the universe. It includes all events of all kinds in all time.

In a limited way, and more specific, the solar system is a product of evolution. The earth as a planet in this system was slowly evolved through the long ages, and was thus made a fit place for living things. This theory holds that the first living things were produced by the same forces that had been previously at work—first, plants, then the simplest animals with the sense of feeling, then higher animals with various kinds of sensation, also the special senses, sight, hearing, etc.; then the instincts of animals, from the simplest to the most complex, and finally man, with his godlike powers of mind, was evolved by the same natural forces. All human history is included in the process of evolution.

Evolution may be compared to a steamer headed up a river in which are many falls and cataracts. This steamer, in her upward course, arrives in front of the first fall, a Niagara, where it must pass from the dead up to the living world. There is no amount of steam that can send the vessel up over this fall. All efforts to drive it upward from the region of death to that of life end in absolute failure. The scientific world, with one voice, admits this to be a fact. Evidently there can be no basis for organic evolution till organic beings appear.

Professor Conn, writing of this, says: "An important part of the evolution problem is, of course, the origin of life, which appears to mean the origin of the first protoplasm. Upon this subject it must be confessed we are in as deep ignorance as ever. Indeed, if anything, the disclosures of the modern microscope have placed the evolution of this problem even further from

our grasp. So long as we could regard protoplasm as a chemical compound, definite, though complex, so long was it possible to believe that its origin in the past geological ages was a simple matter of chemical affinity. It was easy to assume that, under the conditions of earlier ages, when chemical elements were necessarily placed in different relations to each other from those of to-day, chemical combinations could arise which would result in the formation of the complex body, protoplasm. This has been the supposition that has laid the foundation of various suggestions as to the origin of life. But having now learned that this life substance is not a chemical compound, but a mechanism, and that its properties are dependent upon its mechanism, such a conception of the origin of life is no longer tenable. In its place must be substituted some forces which build a mechanism. But even our most extreme evolutionists have not yet suggested any method of bridging the chasm, and at the present time we must recognize that the problem of the origin of life is in greater obscurity than ever. The origin of chemical compounds we may explain, but their combination into the organic machine which we call protoplasm is, at present, unimaginable.

"So far as we know, *unorganized protoplasm does not exist.* The properties of life appear to be manifested by nothing simpler than the organic cell. Everything that grows and reproduces is in some degree differentiated into cells, and the cell seems to be thus the simplest condition of matter which can manifest the properties of life. But the cell is anything but simple. It consists of many parts acting in adjustment to each other. The more it is studied, the more com-

plex it appears. . . . It acts, rather, as a machine. It must be regarded as a mechanism, and can not be called a chemical compound. Its properties are the properties of the cell as a mechanism and not of the cell as a chemical compound. . . . If we trace variation to 'organic composition,' it must be to the mechanical rather than the chemical composition of this substance.

"The simplest form of living matter that we know is found in bacteria; but we are fast learning that even these minute bodies have a structure within, and are in no sense simple chemical compounds. They, too, are mechanisms; simpler, indeed, than those of higher cells, but none the less mechanisms.

"With all our research, the essence and origin of life has thus far eluded our grasp. The scientist should go no further than the evidence leads him, and should not indulge in too much philosophical speculation."

The above extracts, together with others that follow, show that the writer is a cosmic evolutionist, and that to account for the origin of living things the evolutionist must show how they have originated by the action of the inorganic forces of nature upon matter. In other words, spontaneous generation is part of his problem. He shows that to account for this is a hopeless task. But, notwithstanding this impassable chasm, the author assumes that by the aid of natural forces he has passed over it, and he proceeds without hesitation to erect an assumed scientific evolution upon the ethereal foundation of spontaneous generation. When he has presented the theories that have been relied upon to explain the method of evolution, it becomes evident that little or no progress has been made in that direction.

The steamer, Evolution, headed upstream, fails to ascend the first great fall from death into life. Some "unknown power" must lift her to the heights above. No natural forces without design can do this. Now, we imagine that she has been lifted above the fall, and that she travels on, with the life of plants as a part of her outfit. Erelong she stops in front of another fall that she can not ascend. Animals, living organisms that possess feeling, are to be in the stream above. The ship, Evolution, under a full head of steam, is powerless to ascend this fall, and so it is necessary to call in the "unknown power" to lift her into the stream above. She now has on board as a part of her outfit plant life, animal life and the sense of feeling, by the aid of which she hopes to overcome all obstacles that may present themselves.

As to how matter could be made to feel is beyond all hope of science to explain. So far as science can explain, molecular motion is the only thing she had with which to account for the creation of life and sensation. Spencer says that there is "no resemblance between a unit of feeling and a unit of motion."

Darwin says: "In what manner the mental powers were first developed in the lowest organisms is as hopeless an inquiry as how life itself first originated." These acknowledged impossibilities in the process of evolution do not cause the evolutionist to halt for one moment in his extravagant theorizing.

As the ship, Evolution, plods wearily along upstream, she comes to a multitude of falls and cataracts in the form of the many instincts of animals. Many of these instincts are extremely complex, and would have to be evolved simultaneously in order to be of

use—a thing which no theory accounts for. The ship, Evolution, is obliged to invoke the "unknown power" many times to lift her to the heights where these exist. On she goes, propelled by steam, and having as her helpers life, feelings of many kinds, special senses and instincts. But we are told by the author that "the high development of instinct is incompatible with the high development of intelligence, and *vice versa.*"

On the good ship plies her way, until she comes at last to the foot of a cataract thousands of leagues high. Up yonder on the infinite heights stands the mind of man, a spiritual being who has conscience, self-consciousness, knows right from wrong, thinks, reasons, believes, hopes, loves, worships an unseen Spirit who he believes is the Author and Sustainer of the universe—this spirit of man dominates the world. The captain of the ship looked upward, and is much discouraged as he views the heights above. But the ship decides that she must make the effort. Instinct is her highest power on board, but it lacks quality; only faint glimmerings of reason are at hand. The ship, Evolution, assembles her forces, and in her mad despair she makes a wild plunge, and is dashed into a thousand fragments at the foot of the mighty cataract. It would seem that here at least the captain of the ship would be ready to admit that an all-wise God alone could span the gulf between man and brute. But the so-called scientific method of evolution absolutely repudiates all evidence of design in the action of the forces with which she deals.

As to natural selection, Professor Conn writes: "But, after all, the greatest strength of the law of natural selection has been in the fact it has furnished a natural law as a substitute for supernatural intelli-

gence. In the making of worlds and the forming of mountains and valleys, blind force, as studied by the astronomer and geologist, appears to be sufficient, for here there is no adjustment of part to part for definite ends, such as characterizes machines. In the structure of the bodies of animals and plants the case is different. Natural force is blind, and can not be supposed to have any knowledge of the relation of parts adjusted for definite purposes. This seems to imply intelligence, and herein lies the difficulty in applying to living phenomena the same principles of natural law as have been successfully used to explain other natural phenomena. But natural selection seems to furnish a substitute for intelligence. It shows, in other words, how it may be assumed that even blind forces can be sufficient to adapt parts to each other and construct the complicated organs which appear to be such indications of intelligence. Here, then, is the secret of the great influence of natural selection. It replaces a transcendental explanation by a natural law. To be sure, it does not explain force, and this leaves the whole subject shrouded in as deep fundamental mystery as ever. But science does not hope to explain force and power, and will be satisfied to account for natural phenomena by the action of natural forces acting in accordance with natural laws. Natural selection was a great step in this direction.

"Natural selection will explain degradation as well as advance in structure. In other words, while it is always the fittest that survives, the fittest is not always the best."

From the preceding it is evident that the effort of evolution is to explain all things by the action of

"blind force." This, to say the least, forces God into a region of dark uncertainty, so that it becomes easy to deny His existence. This being true, we need not wonder at the prevalent unbelief and practical atheism among evolutionists. "Blind force," acting according to "natural laws," is substituted for "supernatural intelligence," and this is the great *gain* (?).

I have shown in a previous chapter that the so-called laws or forces of nature, when controlled by mind, produce countless results that could never be produced in the inorganic world by "blind force." The fundamental difficulty here is that "blind forces" alone necessarily end in determinism. The fatal assumption that all forces are "blind," and that they do everything, is the foundation of evolution—the basis of naturalism—and this leaves no place even for human miracles.

Natural selection holds that "organic variations" "are fortuitous, and while each doubtless has its definite causes, they are purely accidental so far as purpose is concerned. Such miscellaneous variations do not demand an explanation any more than does the shape of the fragment of stone."

Conn says: "Most of Darwin's evidence was obtained from the study of animals and plants under domestication." These facts "give no direct evidence of the method followed in nature. . . . There can be no struggle for existence among animals under domestication," and, consequently, natural selection, which grows out of this struggle, can not take place under domestication. According to this, most of Darwin's facts are comparatively worthless to prove that natural selection can take place in a state of nature.

Darwin states his theory as follows: "Natural selection acts solely through the preservation of variations in some way advantageous, which consequently endure." The "struggle for existence" necessarily follows the high rate of increase of organisms in a state of nature. It is evident that under domestication there is no place for natural selection to act.

Professor Conn says: "The word 'selection' is here misleading. There is in nature no selector and no selecting. Nature does not select the best, but simply eliminates the worst. . . . A character is not simply preserved because it is useful, but because it enables its possessor to win in the struggle when others without the character would fail."

The failures of natural selection in many places are very striking. It absolutely fails to show how any organ can originate. The process can not begin to act till organs are sufficiently developed to be useful, and this makes it evident that it can not explain the origin of any organ. Professor Conn says: "Paleontology thus far has given us no knowledge of the actual beginning of organs." But paleontology is practically infinite in time, compared to the time that most living species have existed. It contains nearly the whole record. Again he says: "When we find new organs appearing among animals and plants they are simply repetitions of parts already existing; *i. e.*, extra legs, etc." As to the difficulty of accounting for the beginnings of organs, he says: "This fact has led some of our most thoughtful and observant naturalists to question seriously whether natural selection can be a *vera causa,* while it has convinced others that we can never find the explanation of descent by the study of natural

selection, no matter how vigorously we pursue the subject, and that the only chance for further progress is in the study of variations themselves."

The variations of natural selection are haphazard. Conn says: *"If variations are definite, then selection is not the fundamental cause of evolution."* After considering the origin of certain organs, he says: "To explain the origin of organs it would seem that some sort of determinate variation is necessary." This being true, natural selection can not be the "fundamental cause" of evolution.

Selection under domestication is built upon single variations selected by man, but this can not be true in nature. Conn says: "It is an absolute certainty that single variations can not perpetuate themselves if there is free possibility of breeding with unmodified members of the race, for cross-breeding will soon eliminate them. Hence it has been necessary to assume that evolution has advanced by variations around a mean, that natural selection has simply preserved variations above or below a mean, and thus works upon large numbers of individuals rather than upon isolated variations." This method excludes that under domestication. It also results in a uniform type, and fails to produce the necessary divergence of descent. Conn says: "If there is anything certain in the descent theory, it is that there has been a divergence of descent."

To produce the divergence everywhere manifest, he calls to his aid the various kinds of isolation, real and imaginary, that may exist. According to this method isolation of some kind must have appeared a countless number of times to produce the millions of species that exist. That this could have happened I can not believe.

Here it should be remembered that everywhere there exists in nature cross-sterility between closely related species, and that natural selection offers no explanation as to how this has been brought about. Cross-sterility is one of the great problems which any plausible theory of evolution fails to solve. But she must solve it, if her claims are true.

As to useless characters, Conn says: "Such characters can not be explained upon the principle of natural selection except by calling in the obscure law of correlation." Being useless, the theory does not apply.

Natural selection does not account for the absence of intermediate connecting forms, where they ought to be expected to be found. Le Conte has emphasized this difficulty. There are long stretches in the geological record where the rocks are crowded with fossils, but without the connecting links. The intermediate forms must have vastly exceeded in number the fossils that are found, and, at the same time, the conditions for preserving them were favorable. Darwin says in substance that the known forms of fossils are as nothing compared to the forms that must have existed. He expresses surprise that in strata where fossils are well preserved intermediate forms are so few. Romanes says that the geological record deserves the name of "a chapter of accidents." He seems disposed to ignore the geological record.

Mr. Darwin did not believe that natural selection alone was the only factor in evolution. He believed that, to some extent, acquired characters were inherited. Lamarck had previously advanced the theory that "use and disuse, the direct action of food and climate, and the influence of effort on the part of the individual"

were the factors in evolution—and especially "use and disuse." Conn says of Lamarckism: "But the question has been recently forced to the front whether they are real factors at all, and whether they play *any* part in the origin of species. After being recognized and generally accepted for nearly a century, they are to-day regarded with skepticism. . . . The belief in the inheritance of acquired characters has certainly been losing ground in the last ten years, and most naturalists look upon this agency as a doubtful one, and one of comparatively little importance, if accepted at all."

Herbert Spencer claims that unless acquired characters have been inherited there has been no evolution.

Another supplement to natural selection is Weismannism's germ plasm theory, which was first announced in 1883. Conn says of it: "But the theory of Weismann is perhaps the most important addition to the discussion of evolution since Darwin." Again: "Fifteen years after the death of Darwin, his principle of natural selection had been put upon a new foundation and raised to a position where Darwin never conceived of its being placed."

The essential part of Weismann's theory is that a part of the reproductive material, germ plasm, contained in the fertilized ovum is passed on to the offspring, unchanged, generation after generation. Weismann originally held that the germ plasm is contained in the reproductive organs only and that it is absolutely unchangeable. Both of these claims have been practically abandoned. He held that "it is only the character of the germ plasm that determines the inheritance of the subsequent generations." According to this, "*acquired characters can not be transmitted* to pos-

terity." This theory eliminates Lamarckism. The fact that the ovum and spermatozoon are from two different individuals allows room for variations.

But "Weismannism utterly fails to explain how many individuals can vary simultaneously in the same direction. Variations always come from the mixtures of germ plasms in sexual reproduction, and it is impossible that the same mixture should occur in the offspring of any two pairs of individuals. We can, therefore, see no reason why congenital variations should occur in many individuals at once in the same direction. Thus natural selection would be forced to act solely upon the principle of means and averages, a principle satisfactory enough in explaining the development of organs in size and efficiency, but in other places, especially in explaining the beginning of organs, quite inadequate."

Conn also says: "Weismannism, while it accounts for variation, utterly fails to account for determinate variation. As we have noticed, our paleontologists who have studied evolution over long ages of the world's history have become convinced that variations have not been fortuitous, but along certain definite lines. Such a conclusion is certainly at variance with the theory of Weismann. The origin of variations from mixtures of germ plasm offers no opportunity for determinate variation. Now it has been positively demonstrated that such determinate variation is a fact of nature." Weismann "has recognized that variations not only seem to appear in different lines, but that they appear where needed, two facts utterly at variance with the Weismann theory, so far as we have considered it up to this point."

Weismann assumed that "his germ plasm is *absolutely stable; i. e.,* not itself subject to change under the influence of environment." Second, Weismann assumed that this germ plasm is *perpetually* continuous. If either of these conceptions be abandoned, evidently the Weismann theory of evolution must be modified. We shall see that both positions have been virtually given up." He also gave up the claim that germ plasm is confined exclusively to the reproductive organs.

Some naturalists hold that "germ plasm, being the *most complex* of bodies, is said to be also the *most unstable.*"

Weismannism, a supplement to natural selection, could not endure the strain upon it, and so it went to pieces, and it was necessary to patch it up before it could do further service. Organic selection was originated as a supplement. It is as follows: "The essence of the theory of organic selection is that these acquired variations will keep the individuals in harmony with their environment and preserve them under new conditions, until some congenital variation happens to appear of a proper adaptive character. The acquired characters keep the individuals alive until the proper congenital variations appear, and the new habit actually determines what sort of congenital variations shall be preserved, and guides the process of evolution." In this way the Lamarckian factors are supposed to supplement natural selection and Weismannism.

Conn says of this theory: "At the same time there is no doubt that it quite materially alters the earlier notions of natural selection and presents that theory in quite a different aspect. For it is plain that with this idea the guiding force in evolution is no longer

simply the natural selection of minute, haphazard variations, as Darwin supposed, but a combined action of the indirect influence of acquired variations and the selection of haphazard congenital variations.''

This final theory is a patchwork of Lamarckism, Darwinism and Weismannism, all of which have been so modified that they can scarcely be recognized. Organic evolution is purely theoretical. No facts are known on which it can be based. ''The only Lamarckian factor that is left is that the environment, through the acquired characters that it produces, does have an important influence in guiding evolution. The Weismann school is, by its own theory, prevented from receiving aid from the Lamarckian factors and forced to explain evolution wholly by the selection of variations in the germ plasm.''

Professor Conn says: ''At the outset we must notice again that in attempting to build up evolution of species by known forces the weak point in the chain has been variation. That variations exist is patent enough, but what causes them is still uncertain. The mixture of germ plasms furnishes a cause, but an insufficient cause. The effect of changes in the environment may furnish a cause, but this is uncertain. Why similar variations appear in many individuals at once, why they should involve whole groups of organs at the same time, why they appear when they were needed, why they follow along definite lines for long periods of time —all these questions remain unanswered. It is to meet some of these difficulties that Weismann has devised a new theory.'' This is the ''General Selection Theory.'' By devising this theory, he admits the inadequacy of the theories that precede. Professor Conn says of it:

"In considering this theory, we are once more taken into the region of pure speculation. It would be hardly worth our while to refer to it were it not for the fact that it implies a new realm of variation among organisms, and is in this respect at least suggestive."

Professor Conn says of Weismann: "He speaks of the flood of objections raised against the theory of selection, touching its ability to modify many parts at once. He recognizes that the summation of accidental variations is insufficient for the transformation of species, admitting that, if each generation should be obliged to wait for a chance variation before it could advance along à given line, evolution could never get anywhere. He sees thus a necessity of finding something to account for 'determinate' variations. He sees that the force of the difficulties is becoming so great as to drive some of the younger naturalists to abandon natural selection as a causative force, claiming that to ask its acceptance demands us to 'abrogate reason.'"

From the above we see a remarkable state of things with regard to the causes and methods of evolution. Professor Conn states a number of essential things that natural selection, aided by Lamarckism and Weismannism, totally fails to explain. These theories, singly and linked together, have been tested and signally failed. Weismann recognizes the difficulties and devises the "germinal selection theory" to meet them. Conn says of it: "In considering this theory, we are once more taken into the region of pure speculation." Again, he says: "But the whole subject is too imaginary to give us any feeling that we have grasped any new truth with the formulation of such a hypothesis. He says: "It is purely imaginary, and adds nothing to knowledge."

Thus we see that the theories that have been relied on to explain evolution fail entirely to explain certain essential facts. Still men talk about the "science of evolution," when the theories that have been relied on to explain the process are admitted to be wholly insufficient. Professor Conn writes: "It is that the discussion of the methods of evolution, as it has been outlined in the preceding chapters, has been almost entirely of a theoretical kind. It has been a balancing of theory against theory, suggestion against suggestion, hypothesis against hypothesis. Of course, each theory is based upon observed facts. But the amount of hypothesis has become greater as the years of discussion have passed, until finally, in the last theory of Weismann, it reached pure imagination, unverified by fact.

"There has naturally arisen a deal of dissatisfaction among scientists over such fruitless discussion. In recent years especially, the younger naturalists have abandoned these theoretical matters as offering little promise of advance. They have even ceased largely to discuss evolution at all, since they take the general theory as demonstrated, but think we have as yet insufficient data to determine the method of the origin of species. They are turning more directly to nature, to see if observation may not give an answer where discussion has failed."

And so there is no hope of being able to discover the method of evolution. There has been no satisfactory theory offered. Nor can there be a satisfactory solution built upon "blind force" and inorganic matter as the only data. Evolutionists have failed so completely as to the method of evolution that they have practically ceased to consider the subject, and they

accept evolution as a demonstrated fact of science. In my opinion, the facts do not justify this conclusion, for there are many places in the line where the process of evolution is absolutely helpless.

Professor Conn says of the geological record: "In short, it is not clear that the study of the development of animals through the geological ages gives any light upon the origin of variations or their relation to environment. . . . Paleontologists are studying *sequence of types* and not the *origin of variations.*" It is evident that the theories we have considered receive no support from geology.

Natural selection fails to explain the loss of organs by disuse—as in the case of blind fishes in caves. Conn says: "This difficulty is met by Weismann with an appeal to a new principle, which is essentially the result of the *withdrawal* of the action of natural selection." He calls this theory "panmixia." Thus natural selection is given a rest. This is certainly very humane treatment of an overworked steed.

Embryology was formerly regarded by some as the most important evidence of evolution, but it has lost its standing. Conn says of it: "But embryology has not answered all the questions set for it, and there is a tendency at the present time to decry this study as delusive. It is beyond question that the results have been somewhat disappointing. It was at one time hoped that it would disclose with considerable accuracy the history of animals, and so completely teach us that history, as to give a very thorough knowledge of the laws of evolution. But in both respects it has failed to meet expectations. As a source of history it has been found subject to so many misleading irregularities that, in

large numbers of cases, the significance of the numerous conflicting facts can not be demonstrated.'' Embryology, having been tried, failed.

Naturalists are beginning to talk about the ''unknown factor'' in evolution. Some will claim it is ''design.'' ''The naturalist will, of course, insist that the unknown factor will be found among the natural forces.''

Conn says: ''Now, one can hardly pretend to doubt the existence of something corresponding to what has been called 'growth force' . . . not a force in the sense that electricity is a force.''

In conclusion, I may say that ''evolution'' is at present a monomania with a large number of people, and especially with those who have little knowledge of the subject. It is the fad.

1. It is assumed that evolution is universal in its scope. This is only an assumption.

2. It is assumed that natural forces alone are sufficient to account for it, and that these forces are ''blind.'' This claim excludes design. This assumption is unwaranted. We do not know that natural forces are the sum of all causative forces. Facts prove design.

3. It is assumed that these forces act according to fixed laws. I have elsewhere shown that the current ideas with regard to fixed laws are misleading, especially when the laws of nature are dominated by the human mind so that countless results are produced that could not come to pass in the world below mind. It is conceived that a supreme mind might not count for less in the affairs of earth than the mind of man.

4. The action of the ''blind forces'' of nature ends in determinism. But the actions of man, a free moral

agent, prove that the doctrine of determinism is not true.

Evolution fails all along the line. It fails to account for the first living things. The simplest living things are not chemical compounds, but cells, which are mechanisms of complex structure, and they do their work as mechanisms. Their creation calls for a designer who can make a living machine. Evolution fails to account for any one of the numerous psychological phenomena that appear in the animal kingdom. Her only factors, matter and force, fail to account for the dull sensation in the lowest animal. They fail to account for the many kinds of sensations, for the highly developed special senses, for the numerous complex instincts of animals, and are imbecile as creators of the human mind.

Evolution has practically abandoned geology and embryology as giving any worthy support to the theories in vogue.

Darwinism, Lamarckism and Weismannism, singly and combined, have all been declared to be inadequate, and they have been supplemented by Weismann's "Germinal Selection Theory," which is declared to be "purely imaginary." Method ends in imagination!

To think of evolution as an "established science" is to me an impossibility. I trust that the day will come when sanity and sound logic will reign in the scientific world.

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